FM2A85X Extreme6

User Manual

Version 1.0
Published September 2012
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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see
www.dtsc.ca.gov/hazardouswaste/perchlorate"

ASRock Website: http://www.asrock.com

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1. Introduction

Thank you for purchasing ASRock ***FM2A85X Extreme6*** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the configuration guide to BIOS setup and information of the Support CD.

> Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. ASRock website http://www.asrock.com
>
> If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.
>
> www.asrock.com/support/index.asp

1.1 Package Contents

ASRock ***FM2A85X Extreme6*** Motherboard (ATX Form Factor)
ASRock ***FM2A85X Extreme6*** Quick Installation Guide
ASRock ***FM2A85X Extreme6*** Support CD
4 x Serial ATA (SATA) Data Cables (Optional)
1 x I/O Panel Shield

> ***ASRock Reminds You...***
>
> To get better performance in Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit, it is recommended to set the BIOS option in Storage Configuration to AHCI mode.

1.2 Specifications

Platform	- ATX Form Factor - Premium Gold Capacitor design (100% Japan-made high-quality Conductive Polymer Capacitors)
CPU	- Support for Socket FM2 100W processors - Digi Power Design - 8 + 2 Power Phase Design - Supports AMD's Cool 'n' Quiet™ Technology - UMI-Link GEN2
Chipset	- AMD A85X (Hudson-D4)
Memory	- Dual Channel DDR3 Memory Technology - 4 x DDR3 DIMM slots - Support DDR3 2600+(OC)/2400(OC)/2133(OC)/1866/1600/1333/1066/800 non-ECC, un-buffered memory (see **CAUTION 1**) * 2600+ is only supported with two DIMMs - Max. capacity of system memory: 64GB (see **CAUTION 2**) - Supports Intel® Extreme Memory Profile (XMP) 1.3 / 1.2 - Supports AMD Memory Profile (AMP)
Expansion Slot	- 3 x PCI Express 2.0 x16 slots (PCIE2/PCIE4: single at x16 (PCIE2) / x8 (PCIE4), or dual at x8 (PCIE2) / x8 (PCIE4) ; PCIE5: x4 mode) - 2 x PCI Express 2.0 x1 slots - 2 x PCI slots - Supports AMD Quad CrossFireX™, 3-Way CrossFireX™, CrossFireX™ and Dual Graphics
Graphics	- AMD Radeon HD 7000 graphics - DirectX 11, Pixel Shader 5.0 - Max. shared memory 2GB - Four VGA Output options: D-Sub, DVI-D, HDMI and DisplayPort (see **CAUTION 3**) - Supports HDMI 1.4a Technology with max. resolution up to 1920x1200 @ 60Hz - Supports Dual-link DVI with max. resolution up to 2560x1600 @ 75Hz - Supports D-Sub with max. resolution up to 1920x1600 @ 60Hz - Supports DisplayPort 1.2 with max. resolution up to 4096x2160 @ 30Hz - Supports DP++

	- Supports Multi-Streaming - Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI (Compliant HDMI monitor is required) (see **CAUTION 4**) - Supports Blu-ray Stereoscopic 3D with HDMI 1.4a - Supports AMD Steady Video™ 2.0: New video post processing capability for automatic jutter reduction on home/ online video - Supports HDCP function with DVI, HDMI and DisplayPort ports - Supports Full HD 1080p Blu-ray (BD) / HD-DVD playback with DVI, HDMI and DisplayPort ports
Audio	- 7.1 CH HD Audio with Content Protection (Realtek ALC898 Audio Codec) - Premium Blu-ray audio support - Supports THX TruStudio™
LAN	- PCIE x1 Gigabit LAN 10/100/1000 Mb/s - Realtek RTL8111E - Supports Wake-On-LAN - Supports LAN Cable Detection - Supports Energy Efficient Ethernet 802.3az - Supports PXE
Rear Panel I/O	I/O Panel - 1 x PS/2 Mouse/Keyboard Port - 1 x D-Sub Port - 1 x DVI-D Port - 1 x HDMI Port - 1 x DisplayPort - 1 x Optical SPDIF Out Port - 2 x Ready-to-Use USB 2.0 Ports - 1 x eSATA3 Connector - 4 x Ready-to-Use USB 3.0 Ports - 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - 1 x Clear CMOS Switch with LED - HD Audio Jack: Rear Speaker/Central/Bass/Line in/Front Speaker/Microphone
SATA3	- 7 x SATA3 6.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 5 and RAID 10), NCQ, AHCI and “Hot Plug” functions
USB 3.0	- 2 x Rear USB 3.0 ports by AMD A85X (Hudson-D4), support USB 1.1/2.0/3.0 up to 5Gb/s

	- 2 x Rear USB 3.0 ports by ASMedia ASM1042, support USB 1.1/2.0/3.0 up to 5Gb/s - 1 x Front USB 3.0 header (supports 2 USB 3.0 ports) by AMD A85X (Hudson-D4), supports USB 1.1/2.0/3.0 up to 5Gb/s
Connector	- 7 x SATA3 6.0Gb/s connectors - 1 x IR header - 1 x CIR header - 1 x COM port header - 1 x HDMI_SPDIF header - 1 x Power LED header - 1 x Chassis Intrusion header - 2 x CPU Fan connectors (1 x 4-pin, 1 x 3-pin) - 3 x Chassis Fan connectors (1 x 4-pin, 2 x 3-pin) - 1 x Power Fan connector (3-pin) - 24 pin ATX power connector - 8 pin 12V power connector - XFire power connector - Front panel audio connector - 3 x USB 2.0 headers (support 6 USB 2.0 ports) - 1 x USB 3.0 header (supports 2 USB 3.0 ports) - 1 x Dr. Debug (7-Segment Debug LED) - 1 x Power Switch with LED - 1 x Reset Switch with LED
BIOS Feature	- 64Mb AMI UEFI Legal BIOS with GUI support - Supports "Plug and Play" - ACPI 1.1 Compliance Wake Up Events - Supports jumperfree - SMBIOS 2.3.1 Support - DRAM, APU PCIE VDDP, CPU and CPU NB/GFX Voltage Multi-adjustment
Support CD	- Drivers, Utilities, AntiVirus Software (Trial Version), CyberLink MediaEspresso 6.5 Trial, Google Chrome Browser and Toolbar
Hardware Monitor	- CPU Temperature Sensing - Chassis Temperature Sensing - CPU/Chassis/Power Fan Tachometer - CPU Quiet Fan - CPU/Chassis Fan Multi-Speed Control - CASE OPEN detection - Voltage Monitoring: +12V, +5V, +3.3V, Vcore

OS	- Microsoft® Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit compliant
Certifications	- FCC, CE, WHQL - ErP/EuP Ready (ErP/EuP ready power supply is required)

* For detailed product information, please visit our website: http://www.asrock.com

WARNING

Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

CAUTION!

1. Whether 2600/2400/2133/1866/1600MHz memory speed is supported depends on the CPU you adopt. If you want to adopt DDR3 2600/2400/2133/1866/1600 memory module on this motherboard, please refer to the memory support list on our website for the compatible memory modules.
   ASRock website http://www.asrock.com
2. Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 8 / 7 / Vista™. For Windows® 64-bit OS with 64-bit CPU, there is no such limitation. You can use ASRock XFast RAM to utilize the memory that Windows® cannot use.
3. You can choose to use three of the four monitors only. D-Sub, DVI-D, HDMI and DisplayPort monitors cannot be enabled at the same time. Besides, with the DVI-to-HDMI adapter, the DVI-D port can support the same features as HDMIport.
4. xvYCC and Deep Color are only supported under Windows® 8 64-bit / 8 / 7 64-bit / 7. Deep Color mode will be enabled only if the display supports 12bpc in EDID. HBR is supported under Windows® 8 64-bit / 8 / 7 64-bit / 7 / Vista™ 64-bit / Vista™.

1.3 Unique Features

ASRock Extreme Tuning Utility (AXTU)

ASRock Extreme Tuning Utility (AXTU) is an all-in-one tool to fine-tune different system functions in a user-friendly interface, which includes Hardware Monitor, Fan Control, Overclocking, OC DNA, IES and XFast RAM. In Hardware Monitor, it shows the major readings of your system. In Fan Control, it shows the fan speed and temperature for you to adjust. In Overclocking, you are allowed to overclock CPU frequency for optimal system performance. In OC DNA, you can save your OC settings as a profile and share it with your friends. Your friends then can load the OC profile to their own system to get the same OC settings. In IES (Intelligent Energy Saver), the voltage regulator can reduce the number of output phases to improve efficiency when the CPU cores are idle without sacrificing computing performance. In XFast RAM, it fully utilizes the memory space that cannot be used under Windows® OS 32-bit CPU.

ASRock Instant Boot

ASRock Instant Boot allows you to turn on your PC in just a few seconds, provides a much more efficient way to save energy, time, money, and improves system running speed for your system. It leverages the S3 and S4 ACPI features which normally enable the Sleep/Standby and Hibernation modes in Windows® to shorten boot up time. By calling S3 and S4 at specific timing during the shutdown and startup process, Instant Boot allows you to enter your Windows® desktop in a few seconds.

ASRock Instant Flash

ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

ASRock APP Charger

If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPad/iPod Touch, ASRock has prepared a wonderful solution for you - ASRock APP Charger. Simply install the APP Charger driver, it makes your iPhone charge much quickly from your computer and up to 40% faster than before. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5). With APP Charger driver installed, you can easily enjoy the marvelous charging experience.

ASRock XFast USB

ASRock XFast USB can boost USB storage device performance. The performance may depend on the properties of the device.

ASRock XFast LAN

ASRock XFast LAN provides a faster internet access, which includes the benefits listed below. LAN Application Prioritization: You can configure your application's priority ideally and/or add new programs. Lower Latency in Game: After setting online game's priority higher, it can lower the latency in games. Traffic Shaping: You can watch Youtube HD videos and download simultaneously. Real-Time Analysis of Your Data: With the status window, you can easily recognize which data streams you are transferring currently.

ASRock XFast RAM

ASRock XFast RAM is a new function that is included into ASRock Extreme Tuning Utility (AXTU). It fully utilizes the memory space that cannot be used under Windows® OS 32-bit CPU. ASRock XFast RAM shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage of ASRock XFast RAM is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

ASRock Crashless BIOS

ASRock Crashless BIOS allows users to update their BIOS without fear of failing. If power loss occurs during the BIOS update process, ASRock Crashless BIOS will automatically finish the BIOS update procedure after regaining power. Please note that BIOS files need to be placed in the root directory of your USB disk. Only USB2.0 ports support this feature.

ASRock OMG (Online Management Guard)

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

ASRock Internet Flash

ASRock Internet Flash searches for available UEFI firmware updates from our servers. In other words, the system can auto-detect the latest UEFI from our servers and flash them without entering Windows® OS. Please note that you must be running on a DHCP configured computer in order to enable this function.

ASRock UEFI System Browser

ASRock UEFI system browser is a useful tool included in graphical UEFI. It can detect the devices and configurations that users are currently using in their PC. With the UEFI system browser, you can easily examine the current system configuration in UEFI setup.

ASRock Dehumidifier Function

Users may prevent motherboard damages due to dampness by enabling "Dehumidifier Function". When enabling Dehumidifier Function, the computer will power on automatically to dehumidify the system after entering S4/S5 state.

ASRock Easy RAID Installer

ASRock Easy RAID Installer can help you to copy the RAID driver from a support CD to your USB storage device. After copying the RAID driver to your USB storage device, please change "SATA Mode" to "RAID", then you can start installing the OS in RAID mode.

ASRock Interactive UEFI

ASRock Interactive UEFI is a blend of system configuration tools, cool sound effects and stunning visuals. The unprecedented UEFI provides a more attractive interface and brings a lot more amusing.

ASRock Fast Boot

With ASRock's exclusive Fast Boot technology, it takes less than 1.5 seconds to logon to Windows® 8 from a cold boot. No more waiting! The speedy boot will completely change your user experience and behavior.

ASRock X-Boost

Brilliantly designed for combo overclocking, ASRock X-Boost Technology is able to unleash the hidden power of your CPUs. Simply press "X" when turning on the PC, X-Boost will automatically overclock the relative components to get up to 15.77% performance boost! With the smart X-Boost, overclocking CPU can become a near one-button process.

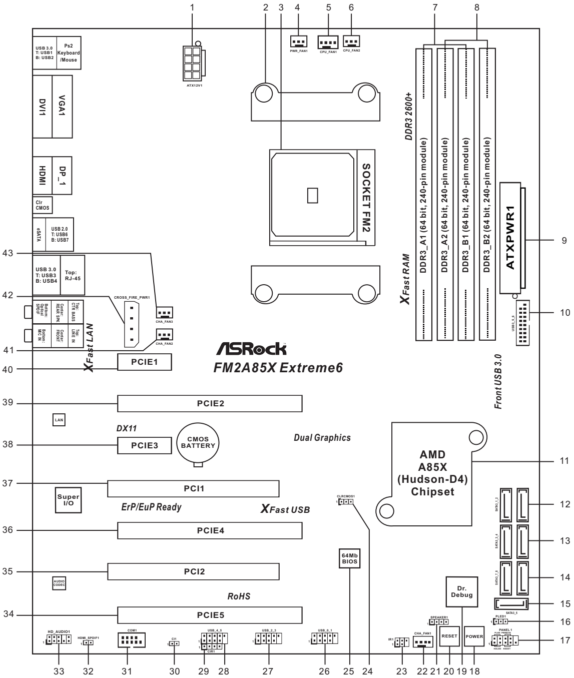
ASRock Restart to UEFI

Windows® 8 brings the ultimate boot up experience. The lightning boot up speed makes it hard to access the UEFI setup. ASRock Restart to UEFI technology is designed for those requiring frequent UEFI access. It is included in ASRock's exclusive all-in-one AXTU tuning program that allows users to easily enter the UEFI automatically when turning on the PC next time. Just simply enable this function; the PC will be assured to access the UEFI directly in the very beginning.

Lucid Virtu Universal MVP

VIRTU Universal MVP includes the base features of Virtu Universal technology, which virtualizes integrated GPU and discrete GPU for best of breed functionality. It also features Virtual Vsync™ for no-compromise visual quality. With the added benefits of HyperFormance technology, VIRTU Universal MVP improves game performance by intelligently reducing redundant rendering tasks in the flow between the CPU, GPU and the display.

1.4 Motherboard Layout


USB 3.0 T: USB1 B: USB2
Ps2 Keyboard /Mouse
DVI1
VGA1
HDMI
DP_1
Clr CMOS
eSATA
USB 2.0 T: USB6 B: USB7
USB 3.0 T: USB3 B: USB4
Top: RJ-45
Bottom: Optical SPDIF
Center: REAR SPK
Top: CTR BASS
Bottom: MIC IN
Center: FRONT
Top: LINE IN
XFast LAN
ATX12V1
PWR_FAN1
CPU_FAN1
CPU_FAN2
SOCKET FM2
DDR3 2600+
XFast RAM
DDR3_A1 (64 bit, 240-pin module)
DDR3_A2 (64 bit, 240-pin module)
DDR3_B1 (64 bit, 240-pin module)
DDR3_B2 (64 bit, 240-pin module)
ATXPWR1
Front USB 3.0
CROSS_FIRE_PWR1
CHA_FAN3
CHA_FAN2
PCIE1
ASRock
FM2A85X Extreme6
PCIE2
LAN
DX11
PCIE3
CMOS BATTERY
Dual Graphics
AMD A85X (Hudson-D4) Chipset
PCI1
Super I/O
ErP/EuP Ready
XFast USB
CLRCMOS1
PCIE4
64Mb BIOS
PCI2
AUDIO CODEC
RoHS
Dr. Debug
PCIE5
SATA3_1_2
SATA3_3_4
SATA3_7_8
SATA3_5
PLED1
SPEAKER1
PANEL1
HD_AUDIO1
HDMI_SPDIF1
COM1
CI1
USB_4_5
CIR1
USB_2_3
USB_0_1
IR1
CHA_FAN1
RESET
POWER
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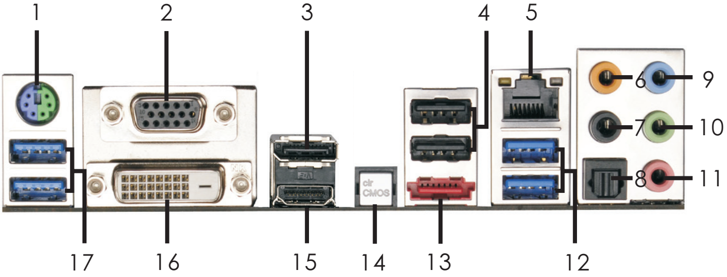
1	ATX 12V Power Connector (ATX12V1)
2	CPU Heatsink Retention Module
3	CPU Socket
4	Power Fan Connector (PWR_FAN1)
5	CPU Fan Connector (CPU_FAN1)
6	CPU Fan Connector (CPU_FAN2)
7	2 x 240-pin DDR3 DIMM Slots (Dual Channel A: DDR3_A1, DDR3_B1)
8	2 x 240-pin DDR3 DIMM Slots (Dual Channel B: DDR3_A2, DDR3_B2)
9	ATX Power Connector (ATXPWR1)
10	USB 3.0 Header (USB3_5_6)
11	Southbridge Controller
12	SATA3 Connectors (SATA3_1_2)
13	SATA3 Connectors (SATA3_3_4)
14	SATA3 Connectors (SATA3_7_8)
15	SATA3 Connector (SATA3_5)
16	Power LED Header (PLED1)
17	System Panel Header (PANEL1)
18	Power Switch (PWRBTN)
19	Dr. Debug (LED)
20	Reset Switch (RSTBTN)
21	Chassis Speaker Header (SPEAKER1)
22	Chassis Fan Connector (CHA_FAN1)
23	Infrared Module Header (IR1)
24	Clear CMOS Jumper (CLRCMOS1)
25	SPI Flash Memory (64Mb)
26	USB 2.0 Header (USB_0_1)
27	USB 2.0 Header (USB_2_3)
28	USB 2.0 Header (USB_4_5)
29	Consumer Infrared Module Header (CIR1)
30	Chassis Intrusion Header (CI1)
31	COM Port Header (COM1)
32	HDMI_SPDIF Header (HDMI_SPDIF1)
33	Front Panel Audio Header (HD_AUDIO1)
34	PCI Express 2.0 x16 Slot (PCIE5)
35	PCI Slot (PCI2)
36	PCI Express 2.0 x16 Slot (PCIE4)
37	PCI Slot (PCI1)
38	PCI Express 2.0 x1 Slot (PCIE3)
39	PCI Express 2.0 x16 Slot (PCIE2)
40	PCI Express 2.0 x1 Slot (PCIE1)
41	Chassis Fan Connector (CHA_FAN2)
42	XFire Power Connector (CROSS_FIRE_PWR1)
43	Chassis Fan Connector (CHA_FAN3)

1.5 I/O Panel



1 PS/2 Mouse/Keyboard Port (Green/Purple)
2 D-Sub Port (VGA1)
3 DisplayPort (DP_1)
*** 4 USB 2.0 Ports (USB_6_7)**
**** 5 LAN RJ-45 Port**
6 Central / Bass (Orange)
7 Rear Speaker (Black)
8 Optical SPDIF Out Port
9 Line In (Light Blue)
***** 10 Front Speaker (Lime)**
11 Microphone (Pink)
12 USB 3.0 Ports (USB3_3_4)
****** 13 eSATA3 Connector (SATA3_6)**
14 Clear CMOS Switch (CLRCBTN)
15 HDMI Port (HDMI1)
16 DVI-D Port (DVI1)
17 USB 3.0 Ports (USB3_1_2)

* It is recommended to install the USB Keyboard/Mouse cable to USB 2.0 ports (USB_7_9) instead of USB 3.0 ports.

** There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

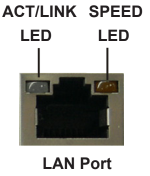
LAN Port LED Indications

Activity/Link LED

Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED

Status	Description
Off	10Mbps connection
Orange	100Mbps connection
Green	1Gbps connection



******* If you use 2-channel speaker, please connect the speaker's plug into "Front Speaker Jack". See the table below for connection details in accordance with the type of speaker you use.

TABLE for Audio Output Connection

Audio Output Channels	Front Speaker (No. 10)	Rear Speaker (No. 7)	Central / Bass (No. 6)	Line In or Side Speaker (No. 9)
2	V	--	--	--
4	V	V	--	--
6	V	V	V	--
8	V	V	V	V

To enable Multi-Streaming function, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will find “Mixer” tool on your system. Please select “Mixer ToolBox” 🔧, click “Enable playback multi-streaming”, and click “ok”.

Choose “2CH”, “4CH”, “6CH”, or “8CH” and then you are allowed to select “Realtek HDA Primary output” to use Rear Speaker, Central/Bass, and Front Speaker, or select “Realtek HDA Audio 2nd output” to use front panel audio.

**** eSATA3 connector supports SATA Gen3 in cable 1M.

2. Installation

This is an ATX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

> Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

2.1 CPU Installation

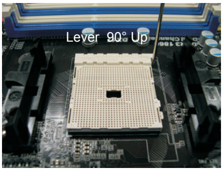
Step 1. Unlock the socket by lifting the lever up to a 90° angle.

Step 2. Position the CPU directly above the socket such that the CPU corner with the golden triangle matches the socket corner with a small triangle.

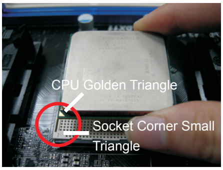
Step 3. Carefully insert the CPU into the socket until it fits in place.

> The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to avoid bending of the pins.

Step 4. When the CPU is in place, press it firmly on the socket while you push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.



STEP 1:
Lift Up The Socket Lever



STEP 2 / STEP 3:
Match The CPU Golden Triangle To The Socket Corner Small Triangle

STEP 4:
Push Down And Lock The Socket Lever

2.2 Installation of CPU Fan and Heatsink

After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU FAN connector (CPU_FAN1, see Page 14, No. 5 or CPU_FAN2, see Page 14, No. 6). For proper installation, please kindly refer to the instruction manuals of the CPU fan and the heatsink.

2.3 Installation of Memory Modules (DIMM)

This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install **identical** (the same brand, speed, size and chip-type) DDR3 DIMM pair in the slots of the same color. In other words, you have to install **identical** DDR3 DIMM pair in **Dual Channel A** (DDR3_A1 and DDR3_B1; see p.14 No.7) or **identical** DDR3 DIMM pair in **Dual Channel B** (DDR3_A2 and DDR3_B2; see p.14 No.8), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR3 DIMMs for dual channel configuration, and please install **identical** DDR3 DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below.

Dual Channel Memory Configurations

	DDR3_A1	DDR3_A2	DDR3_B1	DDR3_B2
(1)	Populated	-	Populated	-
(2)	-	Populated	-	Populated
(3)*	Populated	Populated	Populated	Populated

* For the configuration (3), please install **identical** DDR3 DIMMs in all four slots.

1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots: DDR3_A1 and DDR3_B1, or DDR3_A2 and DDR3_B2.
2. If only one memory module or three memory modules are installed in the DDR3 DIMM slots on this motherboard, it is unable to activate the Dual Channel Memory Technology.
3. If a pair of memory modules is NOT installed in the same Dual Channel, for example, installing a pair of memory modules in DDR3_A1 and DDR3_A2, it is unable to activate the Dual Channel Memory Technology .
4. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.
5. If you adopt DDR3 2600/2400/2133/1866/1600 memory modules on this motherboard, it is recommended to install them on DDR3_A2 and DDR3_B2 slots.

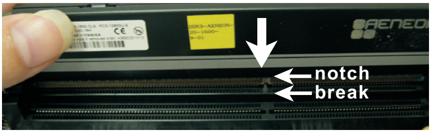
Installing a DIMM

Please make sure to disconnect power supply before adding or removing DIMMs or the system components.

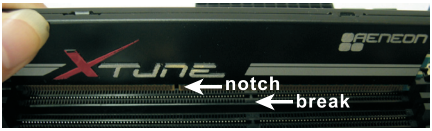
Step 1. Unlock a DIMM slot by pressing the retaining clips outward.

Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.

○



✕



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

2.4 Expansion Slots (PCI and PCI Express Slots)

There are 2 PCI slots and 5 PCI Express slots on this motherboard.

PCI Slots: PCI slots are used to install expansion cards that have the 32-bit PCI interface.

PCIE Slots:

PCIE1 / PCIE3 (PCIE x1 slot) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card and SATA2 card.

PCIE2 / PCIE4 (PCIE x16 slot) is used for PCI Express x16 lane width graphics cards, or used to install PCI Express graphics cards to support CrossFireX™ function.

PCIE5 (PCIE x16 slot) is used for PCI Express x4 lane width cards, or used to install PCI Express graphics cards to support 3-Way CrossFireX™ function.

1. In single VGA card mode, it is recommended to install a PCI Express x16 graphics card on PCIE2 slot.
2. In CrossFireX™ mode, please install PCI Express x16 graphics cards on PCIE2 and PCIE4 slots. Therefore, both these two slots will work at x8 bandwidth.
3. In 3-Way CrossFireX™ mode, please install the PCI Express x16 graphics cards in PCIE2, PCIE4 and PCIE5 slots. PCIE2 and PCIE4 will work at x8 bandwidth, while PCIE5 works at x4 bandwidth.
4. Please connect a chassis fan to motherboard chassis fan connector (CHA_FAN1, CHA_FAN2 or CHA_FAN3) when using multiple graphics cards for better thermal environment.
5. When PCIE2 slot is occupied, the DisplayPort cannot be used.

Installing an expansion card

Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

Step 6. Replace the system cover.

2.5 CrossFireX™, 3-Way CrossFireX™ and Quad CrossFireX™ Operation Guide

This motherboard supports CrossFireX™, 3-way CrossFireX™ and Quad CrossFireX™ feature. CrossFireX™ technology offers the most advantageous means available of combining multiple high performance Graphics Processing Units (GPU) in a single PC. Combining a range of different operating modes with intelligent software design and an innovative interconnect mechanism, CrossFireX™ enables the highest possible level of performance and image quality in any 3D application. Please check AMD website for ATI™ CrossFireX™ driver updates.

1. If a customer incorrectly configures their system they will not see the performance benefits of CrossFireX™. All three CrossFireX™ components, a CrossFireX™ Ready graphics card, a CrossFireX™ Ready motherboard and a CrossFireX™ Edition co-processor graphics card, must be installed correctly to benefit from the CrossFireX™ multi-GPU platform.
2. If you pair a 12-pipe CrossFireX™ Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFireX™ mode.

2.5.1 Graphics Card Setup

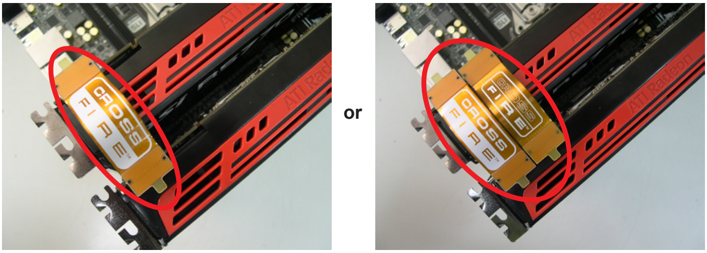
2.5.1.1 Installing Two CrossFireX™-Ready Graphics Cards

Different CrossFireX™ cards may require different methods to enable CrossFireX™ feature. For other CrossFireX™ cards that AMD has released or will release in the future, please refer to AMD graphics card manuals for detailed installation guide.

Step 1. Insert one Radeon graphics card into PCIE2 slot and the other Radeon graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.

Step 2. Connect two Radeon graphics cards by installing CrossFire Bridge on CrossFire Bridge Interconnects on the top of Radeon graphics cards. (CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)

CrossFire Bridge



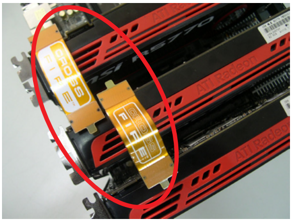
Step 3. Connect the DVI monitor cable to the DVI connector on the Radeon graphics card on PCIE2 slot. (You may use the DVI to D-Sub adapter to convert the DVI connector to D-Sub interface, and then connect the D-Sub monitor cable to the DVI to D-Sub adapter.)

2.5.1.2 Installing Three CrossFireX™-Ready Graphics Cards

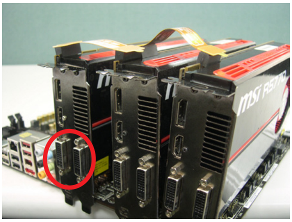
Step 1. Install the identical 3-Way CrossFireX™-ready graphics cards that are AMD certified because different types of graphics cards will not work together properly. (Even the GPU chips version shall be the same.) Insert one graphics card into PCIE2 slot, another graphics card to PCIE4 slot, and the other graphics card to PCIE5 slot. Make sure that the cards are properly seated on the slots.

Step 2. Use one CrossFire™ Bridge to connect Radeon graphics cards on PCIE2 and PCIE4 slots, and use the other CrossFire™ Bridge to connect Radeon graphics cards on PCIE4 and PCIE5 slots. (CrossFire™ Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)

CrossFire™ Bridge



Step 3. Connect the DVI monitor cable to the DVI connector on the Radeon graphics card on PCIE2 slot. (You may use the DVI to D-Sub adapter to convert the DVI connector to D-Sub interface, and then connect the D-Sub monitor cable to the DVI to D-Sub adapter.)



2.5.2 Driver Installation and Setup

Step 1. Power on your computer and boot into OS.

Step 2. Remove the ATI™ driver if you have any VGA driver installed in your system.

> The Catalyst Uninstaller is an optional download. We recommend using this utility to uninstall any previously installed Catalyst drivers prior to installation. Please check AMD website for ATI™ driver updates.

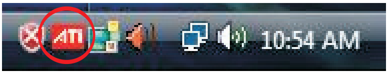
Step 3. Install the required drivers to your system.

For Windows® 8 / 7 / Vista™ OS:

Install the CATALYST Control Center. Please check AMD website for details.

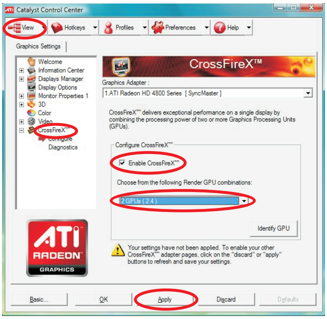
Step 4. Restart your computer.

Step 5. Install the VGA card drivers to your system, and restart your computer. Then you will find "ATI Catalyst Control Center" on your Windows® taskbar.



ATI Catalyst Control Center

Step 6. Double-click "ATI Catalyst Control Center". Click "View", select "CrossFireX™", and then check the item "Enable CrossFireX™". Select "2 GPUs" and click "Apply" (if you install two Radeon graphics cards). Select "3 GPUs" and click "OK" (if you install three Radeon graphics cards).


Catalyst Control Center
View
Hotkeys
Profiles
Preferences
Help
Graphics Settings
Welcome
Information Center
Displays Manager
Display Options
Monitor Properties 1
3D
Color
Video
CrossFireX™
Configure
Diagnostics
CrossFireX™
ATI RADEON GRAPHICS
Identify GPU
Basic...
OK
Apply
Discard
Defaults

Graphics Adapter : 1.ATI Radeon HD 4800 Series [SyncMaster]

CrossFireX™ delivers exceptional performance on a single display by combining the processing power of two or more Graphics Processing Units (GPUs).

Configure CrossFireX™

☑ Enable CrossFireX™

Choose from the following Render GPU combinations: 2 GPUs (2 4)

Your settings have not been applied. To enable your other CrossFireX™ adapter pages, click on the "discard" or "apply" buttons to refresh and save your settings.

Although you have selected the option “Enable CrossFire$^{\text{TM}}$”, the CrossFireX$^{\text{TM}}$ function may not work actually. Your computer will automatically reboot. After restarting your computer, please confirm whether the option “Enable CrossFire$^{\text{TM}}$” in “ATI Catalyst Control Center” is selected or not; if not, please select it again, and then you are able to enjoy the benefit of CrossFireX$^{\text{TM}}$ feature.

Step 7. You can freely enjoy the benefit of CrossFireX$^{\text{TM}}$, 3-Way CrossFireX$^{\text{TM}}$ or Quad CrossFireX$^{\text{TM}}$ feature.

* CrossFireX$^{\text{TM}}$ appearing here is a registered trademark of ATI$^{\text{TM}}$ Technologies Inc., and is used only for identification or explanation and to the owners’ benefit, without intent to infringe.

* For further information of ATI$^{\text{TM}}$ CrossFireX$^{\text{TM}}$ technology, please check AMD website for updates and details.

2.6 AMD Dual Graphics Operation Guide

This motherboard supports AMD Dual Graphics feature. AMD Dual Graphics brings multi-GPU performance capabilities by enabling an AMD A85X (Hudson-D4) integrated graphics processor and a discrete graphics processor to operate simultaneously with combined output to a single display for blisteringly-fast frame rates. Currently, AMD Dual Graphics Technology is only supported with Windows® 8 / 7 OS, and is not available with Windows® Vista™ OS.

What does an AMD Dual Graphics system include?

An AMD Dual Graphics system includes an AMD Radeon HD 7000 graphics processor and a motherboard based on an AMD A85X (Hudson-D4) integrated chipset, all operating in a Windows® 8 / 7 environment. Please refer to AMD website for further information.

Enjoy the benefit of AMD Dual Graphics

Step 1. Please keep the default UEFI setting of “Dual Graphics“ option on [Auto].

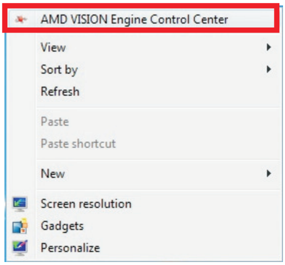
Step 2. Install one AMD RADEON HD7450/7470/7570/7670 PCI Express graphics card to PCIE2 slot.

Step 3. Connect the monitor cable to the onboard VGA port. Please be noted that the current VGA driver / VBIOS can allow Dual Graphics output from on-board display only. For any future update, please refer to our website for further information.

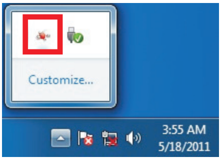
Step 4. Boot into OS. Please remove the AMD driver if you have any VGA driver installed in your system.

Step 5. Install the onboard VGA driver from our support CD to your system for both the onboard VGA and the discrete graphics card.

Step 6. Restart your computer. Right-click the desktop. Click “AMD VISION Engine Control Center” to enter AMD VISION Engine Control Center.

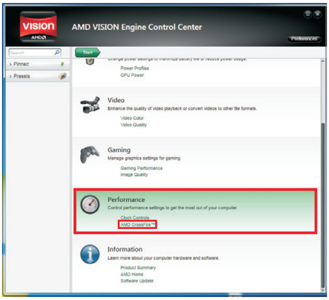


Step 7. You can also click “AMD VISION Engine Control Center” on your Windows® taskbar to enter AMD VISION Engine Control Center.


Customize...
3:55 AM
5/18/2011

AMD VISION Engine Control Center

Step 8. In AMD VISION Engine Control Center, please choose “Performance”. Click “AMD CrossFire™”.


VISION
AMD
AMD VISION Engine Control Center
Preferences
Search
Pinned
Presets
Start
Power Profiles
CPU Power
Video
Video Color
Video Quality
Gaming
Gaming Performance
Image Quality
Performance
Clock Controls
AMD CrossFire™
Information
Product Summary
AMD Home
Software Update

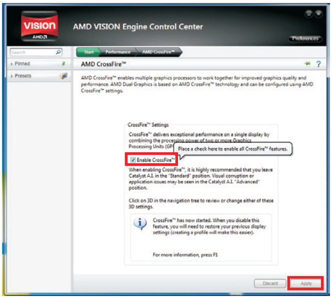
Enhance the quality of video playback or convert videos to other file formats.

Manage graphics settings for gaming.

Control performance settings to get the most out of your computer.

Learn more about your computer hardware and software.

Step 9. Click “Enable CrossFire™” and click “Apply“ to save your change.


VISION
AMD
AMD VISION Engine Control Center
Preferences
Search
Pinned
Presets
Start
Performance
AMD CrossFire™
AMD CrossFire™
CrossFire™ Settings
Discard
Apply

AMD CrossFire™ enables multiple graphics processors to work together for improved graphics quality and performance. AMD Dual Graphics is based on AMD CrossFire™ technology and can be configured using AMD CrossFire™ settings.

CrossFire™ delivers exceptional performance on a single display by combining the processing power of two or more Graphics Processing Units (GP

Place a check here to enable all CrossFire™ features.

☑ Enable CrossFire™

When enabling CrossFire™, it is highly recommended that you leave Catalyst A.I. in the "Standard" position. Visual corruption or application issues may be seen in the Catalyst A.I. "Advanced" position.

Click on 3D in the navigation tree to review or change either of these 3D settings.

CrossFire™ has now started. When you disable this feature, you will need to restore your previous display settings (creating a profile will make this easier).

For more information, press F1

Step 10. Reboot your system. Then you can freely enjoy the benefit of Dual Graphics feature.

* Dual Graphics appearing here is a registered trademark of AMD Technologies Inc., and is used only for identification or explanation and to the owners’ benefit, without intent to infringe.

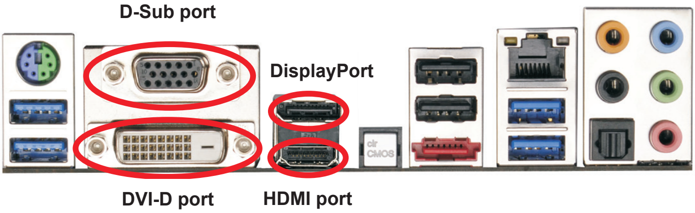
* For further information of AMD Dual Graphics technology, please check AMD website for up dates and details.

2.7 Multi Monitor and Surround Display Features

Multi Monitor Feature

This motherboard supports multi monitor feature. With the internal VGA output support (DVI-D, D-Sub, HDMI and DisplayPort), you can easily enjoy the benefits of multi monitor feature without installing any add-on VGA card to this motherboard. This motherboard also provides independent display controllers for DVI-D, D-Sub, HDMI and DisplayPort to support multi VGA output so that DVI-D, D-sub, HDMI and DisplayPort can drive same or different display contents.
To enable multi monitor feature, please follow the below steps:

1. Connect DVI-D monitor cable to DVI-D port on the I/O panel, connect D-Sub monitor cable to D-Sub port on the I/O panel, connect HDMI monitor cable to HDMI port on the I/O panel, or connect DisplayPort monitor cable to DisplayPort on the I/O panel.



2. If you have installed onboard VGA driver from our support CD to your system already, you can freely enjoy the benefits of dual monitor function after your system boots. If you haven't installed onboard VGA driver yet, please install onboard VGA driver from our support CD to your system and restart your computer.

1. D-Sub, DVI-D, HDMI and DisplayPort monitors cannot be enabled at the same time. You can only choose three of them.
2. When you playback HDCP-protected video from Blu-ray (BD) or HD-DVD disc, the content will be displayed only in one of the three monitors instead of all monitors.
3. To support Dual-link DVI monitor, please connect the DVI monitor cable to the DVI port only.
4. When PCIE2 slot is occupied, the DisplayPort cannot be used.

Surround Display Feature

This motherboard supports surround display upgrade. With the internal VGA output support (DVI-D, D-Sub, HDMI and DisplayPort) and external add-on PCI Express VGA cards, you can easily enjoy the benefits of surround display feature.
Please refer to the following steps to set up a surround display environment:

1. Install the PCI Express VGA card on PCIE2, PCIE4 and PCIE5 slots. Please refer to page 21 for proper expansion card installation procedures for details.
2. Connect a DVI-D monitor cable to the DVI-D port on the I/O panel, connect a D-Sub monitor cable to the D-Sub port on the I/O panel, connect a HDMI monitor cable to the HDMI port on the I/O panel, or connect a DisplayPort monitor cable to the DisplayPort on the I/O panel. Then connect other monitor cables to the corresponding connectors of the add-on PCI Express VGA card on PCIE2, PCIE4 and PCIE5 slots.
3. Boot your system. Press <F2> or <Del> to enter UEFI setup. Enter “Share Memory” option to adjust the memory capability to [32MB], [64MB], [128MB], [256MB] or [512MB] to enable the function of D-sub. Please make sure that the value you select is less than the total capability of the system memory. If you do not adjust the UEFI setup, the default value of “Share Memory”, [Auto], will disable D-Sub function when the add-on VGA card is inserted to this motherboard.
4. Install the onboard VGA driver and the add-on PCI Express VGA card driver to your system. If you have installed the drivers already, there is no need to install them again.
5. Set up a multi-monitor display.

   For Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS:

   Right click the desktop, choose “Personalize”, and select the “Display Settings” tab so that you can adjust the parameters of the multi-monitor according to the steps below.

   A. Click the number ”2” icon.
   B. Click the items “This is my main monitor” and “Extend the desktop onto this monitor”.
   C. Click “OK” to save your change.
   D. Repeat steps A through C for the display icon identified by the number three to nine.

6. Use Surround Display. Click and drag the display icons to positions representing the physical setup of your monitors that you would like to use. The placement of display icons determines how you move items from one monitor to another.

HDCP Function

HDCP function is supported on this motherboard. To use HDCP function with this motherboard, you need to adopt the monitor that supports HDCP function as well. Therefore, you can enjoy the superior display quality with high-definition HDCP encryption contents. Please refer to below instruction for more details about HDCP function.

What is HDCP?

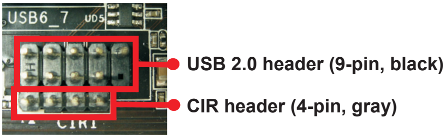
HDCP stands for High-Bandwidth Digital Content Protection, a specification developed by Intel® for protecting digital entertainment content that uses the DVI interface. HDCP is a copy protection scheme to eliminate the possibility of intercepting digital data midstream between the video source, or transmitter - such as a computer, DVD player or set-top box - and the digital display, or receiver - such as a monitor, television or projector. In other words, HDCP specification is designed to protect the integrity of content as it is being transmitted.

Products compatible with the HDCP scheme such as DVD players, satellite and cable HDTV set-top-boxes, as well as few entertainment PCs requires a secure connection to a compliant display. Due to the increase in manufacturers employing HDCP in their equipment, it is highly recommended that the HDTV or LCD monitor you purchase is compatible.

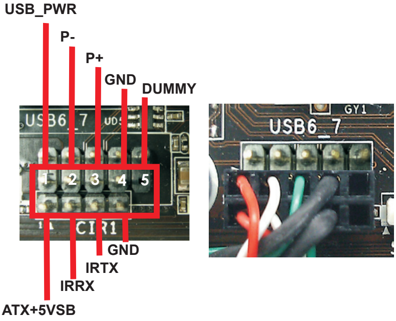
2.8 ASRock Smart Remote Installation Guide

ASRock Smart Remote is only used for ASRock motherboard with CIR header. Please refer to below procedures for the quick installation and usage of ASRock Smart Remote.

Step1. Find the CIR header located next to the USB 2.0 header on ASRock motherboard.


USB6_7
CIR1
USB 2.0 header (9-pin, black)
CIR header (4-pin, gray)

Step2. Connect the front USB cable to the USB 2.0 header (as below, pin 1-5) and the CIR header. Please make sure the wire assignments and the pin assignments are matched correctly.

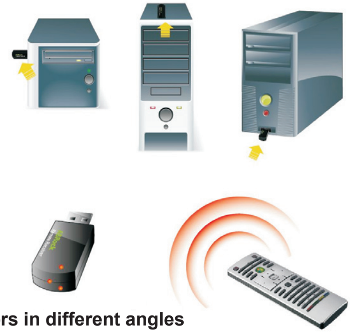

USB_PWR
P-
P+
GND
DUMMY
USB6_7
1
2
3
4
5
CIR1
GND
IRTX
IRRX
ATX+5VSB
USB6_7

Step3. Install Multi-Angle CIR Receiver to the front USB port.

Step4. Boot up your system. Press <F2> or <Del> to enter BIOS Setup Utility. Make sure the option "CIR Controller" is setting at [Enabled]. (Advanced -> Super IO Configuration -> CIR Controller -> [Enabled])

If you cannot find this option, please shut down your system and install Multi-Angle CIR Receiver to the other front USB port then try again.

Step5. Enter Windows. Execute ASRock support CD and install CIR Driver. (It is listed at the bottom of driver list.)



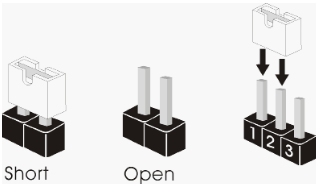
3 CIR sensors in different angles

1. Only one of the front USB port can support CIR function. When the CIR function is enabled, the other port will remain USB function.
2. Multi-Angle CIR Receiver is used for front USB only. Please do not use the rear USB bracket to connect it on the rear panel. Multi-Angle CIR Receiver can receive the multi-direction infrared signals (top, down and front), which is compatible with most of the chassis on the market.
3. The Multi-Angle CIR Receiver does not support Hot-Plug function. Please install it before you boot the system.

* ASRock Smart Remote is only supported by some of ASRock motherboards. Please refer to ASRock website for the motherboard support list: http://www.asrock.com

2.9 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is “Short”. If no jumper cap is placed on pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when jumper cap is placed on these 2 pins.



Jumper	Setting	Description
Clear CMOS Jumper (CLRCMOS1) (see p.14, No. 24)	1_2 ●●○ Default 2_3 ○●● Clear CMOS	

Note: CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed.

1. The Clear CMOS Switch has the same function as the Clear CMOS jumper.
2. If you clear the CMOS, the case open may be detected. Please adjust the BIOS option “Clear Status” to clear the record of previous chassis intrusion status.

2.10 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

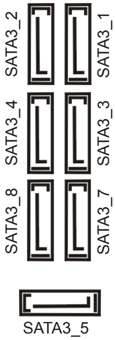
Serial ATA3 Connectors

(SATA3_1_2: see p.14, No. 12)

(SATA3_3_4: see p.14, No. 13)

(SATA3_7_8: see p.14, No. 14)

(SATA3_5: see p.14, No. 15)


SATA3_2
SATA3_1
SATA3_4
SATA3_3
SATA3_8
SATA3_7
SATA3_5

These seven Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

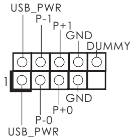
Serial ATA (SATA) Data Cable (Optional)

Either end of the SATA data cable can be connected to the SATA3 hard disk or the SATA3 connector on this motherboard.

USB 2.0 Headers

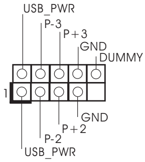
(9-pin USB_0_1)

(see p.14 No. 26)


USB_PWR
P-1
P+1
GND
DUMMY
1
GND
P+0
P-0
USB_PWR

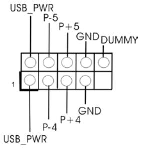
(9-pin USB_2_3)

(see p.14 No. 27)


USB_PWR
P-3
P+3
GND
DUMMY
1
GND
P+2
P-2
USB_PWR

(9-pin USB_4_5)

(see p.14 No. 28)

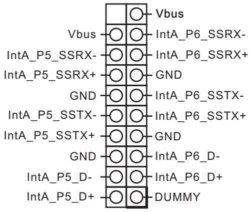

USB_PWR
P-5
P+5
GND
DUMMY
1
GND
P+4
P-4
USB_PWR

Besides two default USB 2.0 ports on the I/O panel, there are three USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

USB 3.0 Header

(19-pin USB3_5_6)

(see p.14, No. 10)

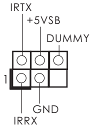

Vbus
Vbus
IntA_P6_SSRX-
IntA_P5_SSRX-
IntA_P6_SSRX+
IntA_P5_SSRX+
GND
GND
IntA_P6_SSTX-
IntA_P5_SSTX-
IntA_P6_SSTX+
IntA_P5_SSTX+
GND
GND
IntA_P6_D-
IntA_P5_D-
IntA_P6_D+
IntA_P5_D+
DUMMY

Besides four default USB 3.0 ports on the I/O panel, there is one USB 3.0 header on this motherboard. This USB 3.0 header can support two USB 3.0 ports.

Infrared Module Header

(5-pin IR1)

(see p.14 No. 23)

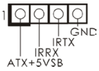

IRTX
+5VSB
DUMMY
1
GND
IRRX

This header supports an optional wireless transmitting and receiving infrared module.

Consumer Infrared Module Header

(4-pin CIR1)

(see p.14 No. 29)

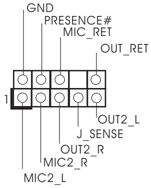

1
GND
IRTX
IRRX
ATX+5VSB

This header can be used to connect the remote controller receiver.

Front Panel Audio Header

(9-pin HD_AUDIO1)

(see p.14 No. 33)


GND
PRESENCE#
MIC_RET
OUT_RET
1
OUT2_L
J_SENSE
OUT2_R
MIC2_R
MIC2_L

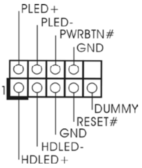
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.

1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC’97 audio panel, please install it to the front panel audio header as below:
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for HD audio panel only. You don’t need to connect them for AC’97 audio panel.
   E. To activate the front mic.
   For Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS: Go to the "FrontMic" Tab in the Realtek Control panel. Adjust “Recording Volume”.

System Panel Header

(9-pin PANEL1)

(see p.14 No. 17)



This header accommodates several system front panel functions.

Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the sys-tem is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5).

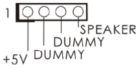
HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly.

Chassis Speaker Header

(4-pin SPEAKER 1)

(see p.14 No. 21)

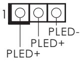


Please connect the chassis speaker to this header.

Power LED Header

(3-pin PLED1)

(see p.14 No. 16)

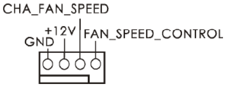


Please connect the chassis power LED to this header to indicate system power status. The LED is on when the system is operating. The LED keeps blinking in S1 state. The LED is off in S3/S4 state or S5 state (power off).

Chassis and Power Fan Connectors

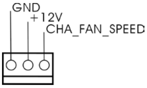
(4-pin CHA_FAN1)

(see p.14 No. 22)


CHA_FAN_SPEED
+12V
GND
FAN_SPEED_CONTROL

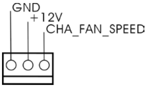
(3-pin CHA_FAN2)

(see p.14 No. 41)


GND
+12V
CHA_FAN_SPEED

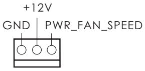
(3-pin CHA_FAN3)

(see p.14 No. 43)


GND
+12V
CHA_FAN_SPEED

(3-pin PWR_FAN1)

(see p.14 No. 4)

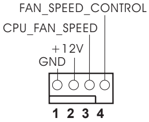

+12V
GND
PWR_FAN_SPEED

Please connect the fan cables to the fan connectors and match the black wire to the ground pin. CHA_FAN1/2/3 fan speed can be controlled through UEFI or AXTU.

CPU Fan Connectors

(4-pin CPU_FAN1)

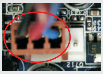
(see p.14 No. 5)


FAN_SPEED_CONTROL
CPU_FAN_SPEED
+12V
GND
1 2 3 4

Please connect the CPU fan cable to the connector and match the black wire to the ground pin.

Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

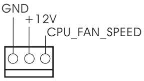
Pin 1-3 Connected ←



3-Pin Fan Installation

(3-pin CPU_FAN2)

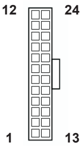
(see p.14 No. 6)


GND
+12V
CPU_FAN_SPEED

ATX Power Connector

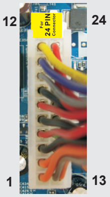
(24-pin ATXPWR1)

(see p.14 No. 9)



Please connect an ATX power supply to this connector.

Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 13.

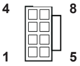


20-Pin ATX Power Supply Installation

ATX 12V Power Connector

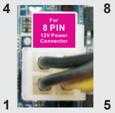
(8-pin ATX12V1)

(see p.14 No. 1)



Please connect an ATX 12V power supply to this connector.

Though this motherboard provides 8-pin ATX 12V power connector, it can still work if you adopt a traditional 4-pin ATX 12V power supply. To use the 4-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 5.

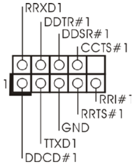


4-Pin ATX 12V Power Supply Installation

Serial port Header

(9-pin COM1)

(see p.14 No. 31)

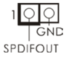


This COM1 header supports a serial port module.

HDMI_SPDIF Header

(2-pin HDMI_SPDIF1)

(see p.14 No. 32)

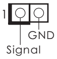


HDMI_SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/ projector/LCD devices. Please connect the HDMI_SPDIF connector of HDMI VGA card to this header.

Chassis Intrusion Header

(2-pin CI1)

(see p.14, No. 30)



This motherboard supports CASE OPEN detection feature that detects if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

XFire Power Connector

(4-pin CROSS_FIRE_PWR1)

(see p.14 No. 42)

CROSS_FIRE_PWR1

It is not necessary to use this connector, but please connect it with a hard disk power connecor when two graphics cards are plugged to this motherboard.

2.11 Smart Switches

This motherboard has three smart switches: power switch, reset switch and clear CMOS switch, allowing users to quickly turn on/off or reset the system or clear the CMOS values.

Power Switch (PWRBTN) (see p.14 No. 18)	⏻	Power Switch is a smart switch, allowing users to quickly turn on/off the system.
Reset Switch (RSTBTN) (see p.14 No. 20)	RESET	Reset Switch is a smart switch, allowing users to quickly reset the system.
Clear CMOS Switch (CLRCBTN) (see p.15 No. 14)	clr CMOS	Clear CMOS Switch is a smart switch, allowing users to quickly clear the CMOS values

2.12 Dr. Debug

Dr. Debug is used to provide code information, which makes troubleshooting even easier. Please see the diagrams below for reading the Dr. Debug codes.

Status Code	Description
00	Please check if CPU is installed correctly and then clear CMOS.
0d	Problem related to memory, VGA card and other devices. Please clear CMOS, re-install memory and VGA card, and remove other USB, PCI devices.
01 - 54 (except 0d), 5A- 60	Problem related to memory. Please re-install CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.
55	Memory could not be detected. Please re-install memory and CPU. If the problem still exists, please install only one memory module or try using other memory modules.
61 - 91	Chipset initialization error. Please press reset or clear CMOS.
92 - 99	Problem related to PCI-E devices. Please re-install PCI-E devices or try installing them in other slots. If the problem still exists, please remove all PCI-E devices or try using another VGA card.
A0 - A7	Problem related to IDE or SATA devices. Please re-install IDE and SATA devices. If the problem still exists, please clear CMOS and try removing all SATA devices.
b0	Problem related to memory. Please re-install CPU and memory. If the problem still exists, please install only one memory module or try using other memory modules. * For X79 models, please try installing memory to DDR3_A1, B1, C1 and D1 slots.
b4	Problem related to USB devices. Please try removing all USB devices.
b7	Problem related to memory. Please re-install CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.
d6	VGA could not be recognized. Please clear CMOS and try re-installing the VGA card. If the problem still exists, please try installing the VGA card in other slots or using other VGA cards.
d7	Keyboard and mouse could not be recognized. Please try re-installing keyboard and mouse.
d8	Invalid Password.
FF	Please check if CPU is installed correctly and then clear CMOS.

2.13 Serial ATA3 (SATA3) Hard Disks Installation

This motherboard adopts AMD A85X (Hudson-D4) chipset that supports Serial ATA3 (SATA3) hard disks and RAID (RAID 0, RAID 1, RAID 5 and RAID 10) functions. You may install SATA3 hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA3 hard disks.

STEP 1: Install the SATA3 hard disks into the drive bays of your chassis.
STEP 2: Connect the SATA power cable to the SATA3 hard disk.
STEP 3: Connect one end of the SATA data cable to the motherboard's SATA3 connector.
STEP 4: Connect the other end of the SATA data cable to the SATA3 hard disk.

2.14 Hot Plug and Hot Swap Functions for SATA3 HDDs

This motherboard supports Hot Plug and Hot Swap functions for SATA3 in RAID / AHCI mode. AMD A85X (Hudson-D4) chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort.

NOTE

What is Hot Plug Function?

If the SATA3 HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA3 HDDs while the system is still power-on and in working condition.
However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA3 HDD.

What is Hot Swap Function?

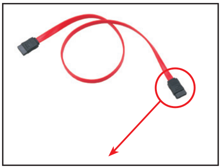
If SATA3 HDDs are built as RAID 1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA3 HDDs while the system is still power-on and in working condition.

2.15 SATA3 HDD Hot Plug Feature and Operation Guide

This motherboard supports Hot Plug feature for SATA3 HDD in RAID / AHCI mode. Please read below operation guide of Hot Plug feature carefully. Before you process the SATA3 HDD Hot Plug, please check below cable accessories from the motherboard gift box pack.

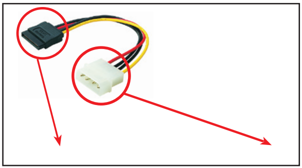
A. 7-pin SATA data cable
B. SATA power cable with SATA 15-pin power connector interface

A. SATA data cable (Red)



SATA 7-pin connector

B. SATA power cable



The SATA 15-pin power connector (Black) connect to SATA3 HDD

1x4-pin conventional power connector (White) connect to power supply

Caution

1. Without SATA 15-pin power connector interface, the SATA3 Hot Plug cannot be processed.
2. Even some SATA3 HDDs provide both SATA 15-pin power connector and IDE 1x4-pin conventional power connector interfaces, the IDE 1x4-pin conventional power connector interface is definitely not able to support Hot Plug and will cause the HDD damage and data loss.

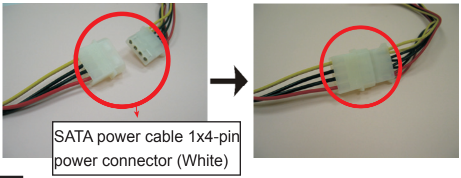
Points of attention, before you process the Hot Plug:

1. Below operation procedure is designed only for our motherboard, which supports SATA3 HDD Hot Plug.
   * The SATA3 Hot Plug feature might not be supported by the chipset because of its limitation, the SATA3 Hot Plug support information of our motherboard is indicated in the product spec on our website: www.asrock.com
2. Make sure your SATA3 HDD can support Hot Plug function from your dealer or HDD user manual. The SATA3 HDD, which cannot support Hot Plug function, will be damaged under the Hot Plug operation.
3. Please make sure the SATA3 driver is installed into system properly. The latest SATA3 driver is available on our support website: www.asrock.com
4. Make sure to use the SATA power cable & data cable, which are from our motherboard package.
5. Please follow below instructions step by step to reduce the risk of HDD crash or data loss.

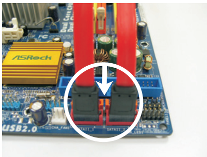
How to Hot Plug a SATA3 HDD:

Points of attention, before you process the Hot Plug:
Please do follow below instruction sequence to process the Hot Plug, improper procedure will cause the SATA3 HDD damage and data loss.

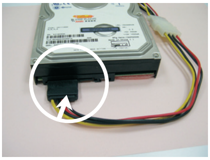
Step 1 Please connect SATA power cable 1x4-pin end (White) to the power supply 1x4-pin cable.



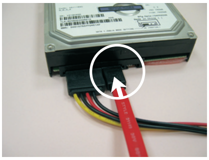
Step 2 Connect SATA data cable to the motherboard's SATAII / SATA3 connector.



Step 3 Connect SATA 15-pin power cable connector (Black) end to SATA3 HDD.



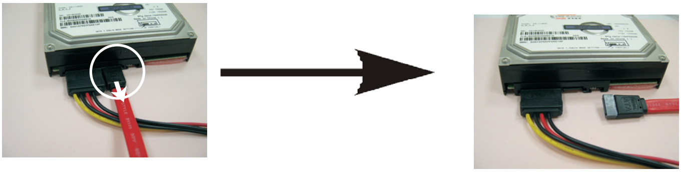
Step 4 Connect SATA data cable to the SATA3 HDD.



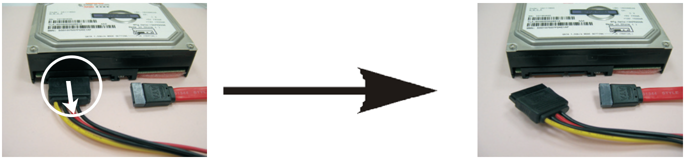
How to Hot Unplug a SATA3 HDD:

Points of attention, before you process the Hot Unplug:
Please do follow below instruction sequence to process the Hot Unplug, improper procedure will cause the SATA3 HDD damage and data loss.

Step 1 Unplug SATA data cable from SATA3 HDD side.



Step 2 Unplug SATA 15-pin power cable connector (Black) from SATA3 HDD side.



2.16 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from up to bottom side to install those required drivers. Therefore, the drivers you install can work properly.

2.17 Installing Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit With RAID Functions

If you want to install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit on a RAID disk composed of 2 or more SATA3 HDDs with RAID functions, please follow below steps.

STEP 1: Set up UEFI.

A. Enter UEFI SETUP UTILITY → Advanced screen → Storage Configuration.

B. Set the “SATA Mode” option to [RAID].

STEP 2: Use “RAID Installation Guide” to set RAID configuration.

Before you start to configure RAID function, you need to check the RAID installation guide in the Support CD for proper configuration. Please refer to the BIOS RAID installation guide part of the document in the following path in the Support CD:

.. \ RAID Installation Guide

STEP 3: Install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.

2.18 Installing Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit Without RAID Functions

If you want to install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit on your SATA3 HDDs without RAID functions, please follow below steps.

Using SATA3 HDDs with NCQ and Hot Plug functions (AHCI mode)

STEP 1: Set up UEFI.

A. Enter UEFI SETUP UTILITY → Advanced screen → Storage Configuration.

B. Set the “SATA Mode” option to [AHCI].

STEP 2: Install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.

Using SATA3 HDDs without NCQ and Hot Plug functions (IDE mode)

STEP 1: Set up UEFI.

A. Enter UEFI SETUP UTILITY → Advanced screen → Storage Configuration.

B. Set the “SATA Mode” option to [IDE].

STEP 2: Install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.

3. *UEFI SETUP UTILITY*

3.1 Introduction

ASRock Interactive UEFI is a blend of system configuration tools, cool sound effects and stunning visuals. Not only will it make BIOS setup less difficult but also a lot more amusing. This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Delete> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines.
If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	For setting system time/date information
OC Tweaker	For overclocking configurations
Advanced	For advanced system configurations
Tool	Useful tools
H/W Monitor	Displays current hardware status
Boot	For configuring boot settings and boot priority
Security	For security settings
Exit	Exit the current screen or the UEFI SETUP UTILITY

Use < ← > key or < → > key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also navigate with a mouse.

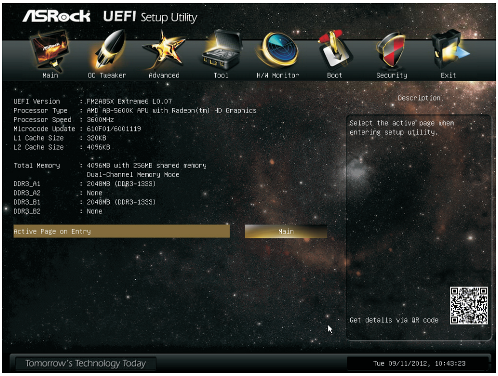
3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	**Function Description**
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Tab>	Switch to next function
<Enter>	To bring up the selected screen
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the UEFI SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



```
UEFI Version      : FM2A85X Extreme6 L0.07
Processor Type    : AMD A8-5600K APU with Radeon(tm) HD Graphics
Processor Speed   : 3600MHz
Microcode Update  : 610F01/6001119
L1 Cache Size     : 320KB
L2 Cache Size     : 4096KB

Total Memory      : 4096MB with 256MB shared memory
                    Dual-Channel Memory Mode
DDR3_A1           : 2048MB (DDR3-1333)
DDR3_A2           : None
DDR3_B1           : 2048MB (DDR3-1333)
DDR3_B2           : None

Active Page on Entry                  Main
```

Select the active page when entering setup utility.

Get details via QR code

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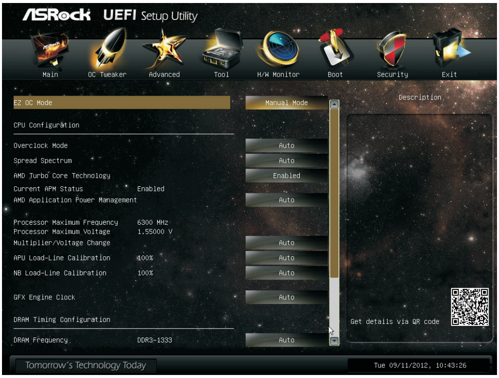
Active Page on Entry

This allows you to select the default page when entering UEFI setup utility.

3.3 OC Tweaker Screen

In the OC Tweaker screen, you can set up overclocking features.



```
EZ OC Mode                                          Manual Mode

CPU Configuration

Overclock Mode                                      Auto
Spread Spectrum                                     Auto
AMD Turbo Core Technology                           Enabled
Current APM Status                 Enabled
AMD Application Power Management                    Auto

Processor Maximum Frequency        6300 MHz
Processor Maximum Voltage          1.55000 V
Multiplier/Voltage Change                           Auto
APU Load-Line Calibration          100%             Auto
NB Load-Line Calibration           100%             Auto

GFX Engine Clock                                    Auto

DRAM Timing Configuration

DRAM Frequency                     DDR3-1333        Auto

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```

EZ OC Mode

You can use this option to adjust EZ overclocking setting. Please note that overclocing may cause damage to your components and motherboard. It should be done at your own risk and expense.

CPU Configuration

Overclock Mode

Use this to select Overclock Mode. Configuration options: [Auto] and [Manual]. The default value is [Auto].

APU/PCIE Frequency (MHz)

This item appears only when you set the item “Overclock Mode“ to [Manual]. The default value is [Disabled]. Please be noted that overclocking may reduce the D-Sub resolution and cause the display abnormal situation. It is recommended to use DVI or HDMI monitor to get better performance.

Spread Spectrum

This item should always be [Auto] for better system stability.

AMD Turbo Core Technology

This item appears only when the processor you adopt supports this feature. Use this to select enable or disable AMD Turbo Core Technology. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

Processor Maximum Frequency

It will display Processor Maximum Frequency for reference.

Processor Maximum Voltage

It will display Processor Maximum Voltage for reference.

Multiplier/Voltage Change

This item is set to [Auto] by default. If it is set to [Manual], you may adjust the value of Processor Frequency and Processor Voltage. However, it is recommended to keep the default value for system stability.

Boost Frequency Multiplier

For safety and system stability, it is not recommended to adjust the value of this item.

CPU Frequency Multiplier

For safety and system stability, it is not recommended to adjust the value of this item.

CPU Voltage

It allows you to adjust the value of CPU voltage. However, for safety and system stability, it is not recommended to adjust the value of this item.

CPU Voltage Offset

It allows you to adjust the value of CPU voltage offset. However, for safety and system stability, it is not recommended to adjust the value of this item.

CPU NB Frequency Multiplier

For safety and system stability, it is not recommended to adjust the value of this item.

CPU NB/GFX Voltage

It allows you to adjust the value of CPU NB/GFX voltage. However, for safety and system stability, it is not recommended to adjust the value of this item.

CPU NB/GFX Voltage Offset

It allows you to adjust the value of CPU NB/GFX voltage offset. However, for safety and system stability, it is not recommended to adjust the value of this item.

APU Load-line Calibration

APU Load-line Calibration helps prevent APU voltage droop when the system is under heavy load.

NB Load-line Calibration

NB Load-line Calibration helps prevent NB voltage droop when the system is under heavy load.

GFX Engine Clock

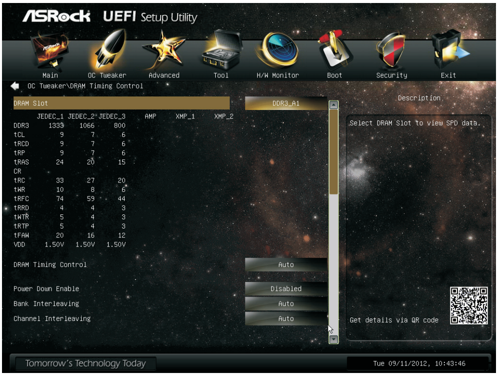
Use this to adjust GFX Engine Clock. The default value is [Auto].

DRAM Timing Configuration

DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically.

DRAM Timing Control


ASRock UEFI Setup Utility
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OC Tweaker\DRAM Timing Control

DRAM Slot DDR3_A1

	JEDEC_1	JEDEC_2	JEDEC_3	AMP	XMP_1	XMP_2
DDR3	1333	1066	800			
tCL	9	7	6			
tRCD	9	7	6			
tRP	9	7	6			
tRAS	24	20	15			
CR						
tRC	33	27	20			
tWR	10	8	6			
tRFC	74	59	44			
tRRD	4	4	3			
tWTR	5	4	3			
tRTP	5	4	3			
tFAW	20	16	12			
VDD	1.50V	1.50V	1.50V			

DRAM Timing Control Auto

Power Down Enable Disabled

Bank Interleaving Auto

Channel Interleaving Auto

Select DRAM Slot to view SPD data.

Get details via QR code

DRAM Slot

Use this item to view SPD data.

DRAM Timing Control

Use this item to control DRAM timing.

Power Down Enable

Use this item to enable or disable DDR power down mode.

Bank Interleaving

Interleaving allows memory accesses to be spread out over banks on the same node, or accross nodes, decreasing access contention.

Channel Interleaving

It allows you to enable Channel Memory Interleaving. Configuration options: [Disabled], [Auto]. The default value is [Auto].

Voltage Configuration

DRAM Voltage

Use this to select DRAM Voltage. The default value is [Auto].

APU PCIE Voltage VDDP

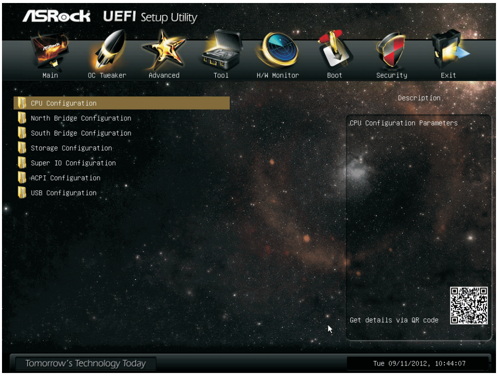
Use this to select APU PCIE Voltage VDDP. The default value is [Auto].

SB Voltage

Use this to select SB Voltage. The default value is [Auto].

3.4 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Nouth Bridge Configuration, South Bridge Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration and USB Configuration.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CPU Configuration
North Bridge Configuration
South Bridge Configuration
Storage Configuration
Super IO Configuration
ACPI Configuration
USB Configuration

CPU Configuration Parameters

Get details via QR code

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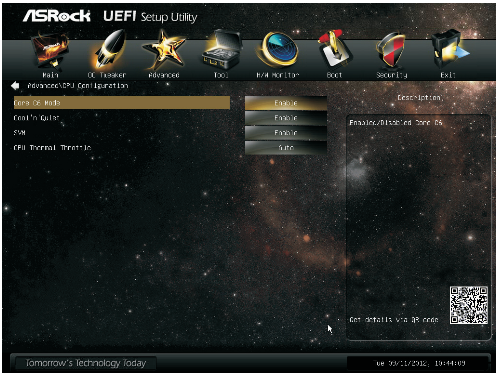
Setting wrong values in this section may cause the system to malfunction.

3.4.1 CPU Configuration


ASRock UEFI Setup Utility
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Core C6 Mode Enable
Cool'n'Quiet Enable
SVM Enable
CPU Thermal Throttle Auto

Enabled/Disabled Core C6

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Core C6 Mode

Use this item to enable or disable Core C6 mode. The default value is [Enabled].

Package C6 Mode

This item appears only when you enable the item “Core C6 Mode”. Use this item to enable or disable Package C6 mode. The default value is [Disabled].

Cool ‘n’ Quiet

Use this item to enable or disable AMD’s Cool ‘n’ Quiet™ technology. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® 8 / 7 / Vista™ and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs.

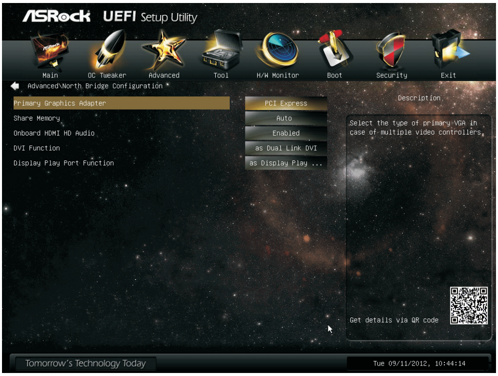
SVM

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled].

CPU Thermal Throttle

Use this item to enable CPU internal thermal control mechanism to keep the CPU from overheated. The default value is [Auto].

3.4.2 North Bridge Configuration



Advanced\North Bridge Configuration

Primary Graphics Adapter	PCI Express
Share Memory	Auto
Onboard HDMI HD Audio	Enabled
DVI Function	as Dual Link DVI
Display Play Port Function	as Display Play ...

Select the type of primary VGA in case of multiple video controllers.

Get details via QR code

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Primary Graphics Adapter

This item will switch the PCI Bus scanning order while searching for video card. It allows you to select the type of Primary VGA in case of multiple video controllers. The default value of this feature is [PCI Express]. Configuration options: [Onboard], [PCI] and [PCI Express].

Share Memory

This allows you to set the share memory feature. The default value is [Auto]. Configuration options: [Auto], [32MB], [64MB], [128MB], [256MB] and [512MB].

Onboard HDMI HD Audio

This allows you to enable or disable the "Onboard HDMI HD Audio" feature.

Dual Graphics

This item appears only when you install AMD RADEON HD7450/7470/7570/7670 graphics card on this motherboard. Use this to enable or disable Dual Graphics feature. If you enable this option, the primary monitor will be onboard VGA. If you select [Auto], Dual Graphics function will be automatically enabled when you install AMD RADEON HD7450/7470/7570/7670 graphics card. The default value is [Auto].

DVI Function

Use this to select DVI function when you install the DVI to HDMI adapter to DVI port. Configuration options: [as Dual Link DVI] and [as HDMI]. If you select [as Dual Link DVI], you can use Dual Link DVI monitor without audio function. If you select [as HDMI], you can use HDMI monitor with audio function. The default value is [as Dual Link DVI].

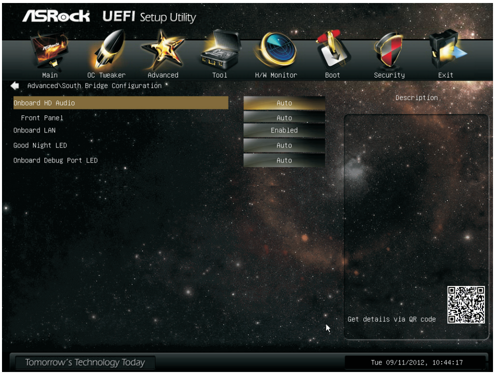
PCIex16_2/DP Output

Use this to select the PCIex16_2 slot/DP port output type. Configuration options: [Auto], [PCIex16_2] and [DP]. The default value is [Auto].

Display Play Port Function

Use this to select Display Play Port function. Configuration options: [as Display Play Port] and [as HDMI]. The default value is [as Display Play Port].

3.4.3 South Bridge Configuration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Onboard HD Audio Auto
Front Panel Auto
Onboard LAN Enabled
Good Night LED Auto
Onboard Debug Port LED Auto

Onboard HD Audio

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged.

Front Panel

Select [Auto] or [Disabled] for the onboard HD Audio Front Panel.

Onboard LAN

This allows you to enable or disable the onboard LAN feature.

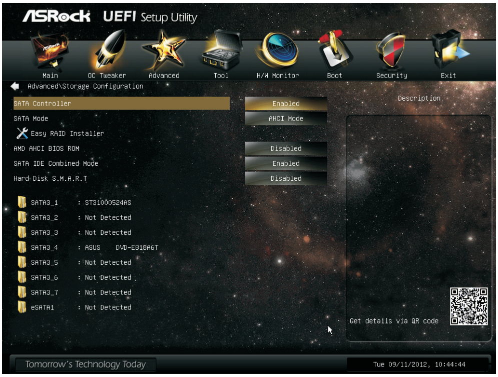
Good Night LED

Enable this option to turn off Power LED and Port80 LED when the system is power on. The keyboard LED will also be turned off in S1, S3 and S4 state. The default value is [Auto].

Onboard Debug Port LED

Use this to enable or disable onboard debug port LED. The default value is [Auto].

3.4.4 Storage Configuration



Advanced\Storage Configuration

SATA Controller: Enabled
SATA Mode: AHCI Mode
Easy RAID Installer
AMD AHCI BIOS ROM: Disabled
SATA IDE Combined Mode: Enabled
Hard Disk S.M.A.R.T: Disabled

SATA3_1 : ST31000524AS
SATA3_2 : Not Detected
SATA3_3 : Not Detected
SATA3_4 : ASUS DVD-E818A6T
SATA3_5 : Not Detected
SATA3_6 : Not Detected
SATA3_7 : Not Detected
eSATA1 : Not Detected

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SATA Controller

Use this item to enable or disable the “SATA Controller” feature.

SATA Mode

Use this item to adjust SATA Mode. The default value of this option is [AHCI Mode]. Configuration options: [AHCI Mode], [RAID Mode] and [IDE Mode].

> If you set this item to RAID mode, it is suggested to install SATA ODD driver on SATA3_7 and SATA3_8 ports.

Easy RAID Installer

Easy RAID Installer can help you to copy the RAID driver from a support CD to your USB storage device. After copying the RAID driver to your USB storage device, please change “SATA Mode” to “RAID”, then you can start installing the OS in RAID mode.

AMD AHCI BIOS ROM

Use this item to enable or disable AMD AHCI BIOS ROM. The default value of this option is [Disabled].

SATA IDE Combined Mode

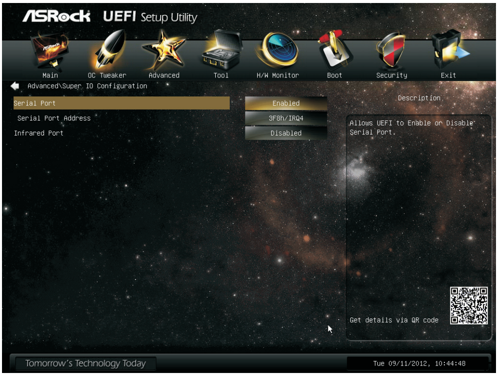
This item is for SATA3_7 and SATA3_8 ports. Use this item to enable or disable SATA IDE combined mode. The default value is [Enabled].

> If you want to build RAID on SATA3_7 and SATA3_8 ports, please disable this item.

Hard Disk S.M.A.R.T.

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled], [Auto], [Enabled].

3.4.5 Super IO Configuration


ASRock UEFI Setup Utility
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Serial Port Enabled

Serial Port Address 3F8h/IRQ4

Infrared Port Disabled

Allows UEFI to Enable or Disable Serial Port.

Serial Port

Use this item to enable or disable the onboard serial port.

Serial Port Address

Use this item to set the address for the onboard serial port. Configuration options: [3F8h / IRQ4] and [3E8h / IRQ4].

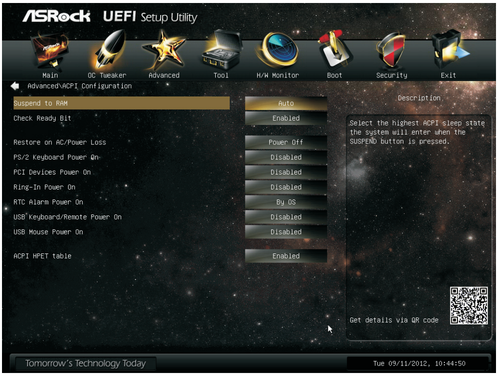
Infrared Port

Use this item to enable or disable the onboard infrared port.

Infrared Port Address

Use this item to set the address for the onboard infrared port. Configuration options: [2F8h / IRQ3] and [2E8h / IRQ3].

3.4.6 ACPI Configuration



Advanced\ACPI Configuration

```
Suspend to RAM                  Auto
Check Ready Bit                 Enabled

Restore on AC/Power Loss        Power Off
PS/2 Keyboard Power On          Disabled
PCI Devices Power On            Disabled
Ring-In Power On                Disabled
RTC Alarm Power On              By OS
USB Keyboard/Remote Power On    Disabled
USB Mouse Power On              Disabled

ACPI HPET table                 Enabled
```

Description

Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

Get details via QR code

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Suspend to RAM

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it.

Check Ready Bit

Use this item to enable or disable the feature Check Ready Bit.

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

USB Keyboard/Remote Power On

Use this item to enable or disable USB Keyboard/Remote to power on the system.

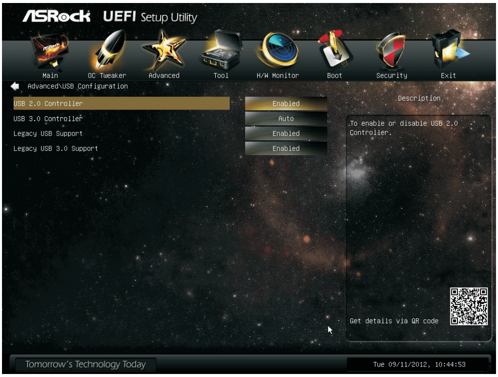
USB Mouse Power On

Use this item to enable or disable USB Mouse to power on the system.

ACPI HPET table

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® certification.

3.4.7 USB Configuration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USB 2.0 Controller	Enabled
USB 3.0 Controller	Auto
Legacy USB Support	Enabled
Legacy USB 3.0 Support	Enabled

To enable or disable USB 2.0 Controller.

USB 2.0 Controller

Use this item to enable or disable the use of USB 2.0 controller.

USB 3.0 Controller

Use this item to enable or disable the use of USB 3.0 controller.

Legacy USB Support

Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these four options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

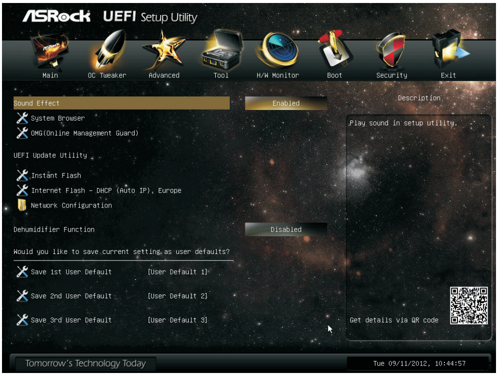
[Disabled] - USB devices are not allowed to use under legacy OS and UEFI setup when [Disabled] is selected. If you have USB compatibility issue, it is recommended to select [Disabled] to enter OS.

[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

Legacy USB 3.0 Support

Use this option to enable or disable legacy support for USB 3.0 devices. The default value is [Enabled].

3.5 Tool



Sound Effect Enabled

System Browser

OMG(Online Management Guard)

UEFI Update Utility

Instant Flash

Internet Flash - DHCP (Auto IP), Europe

Network Configuration

Dehumidifier Function Disabled

Would you like to save current setting as user defaults?

Save 1st User Default [User Default 1]

Save 2nd User Default [User Default 2]

Save 3rd User Default [User Default 3]

Play sound in setup utility.

Get details via QR code

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Sound Effect

Enable or disable sound effects in the setup utility.

System Browser

System Browser can let you easily check your current system configuration in UEFI setup.

OMG(Online Management Guard)

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

UEFI Download Utility

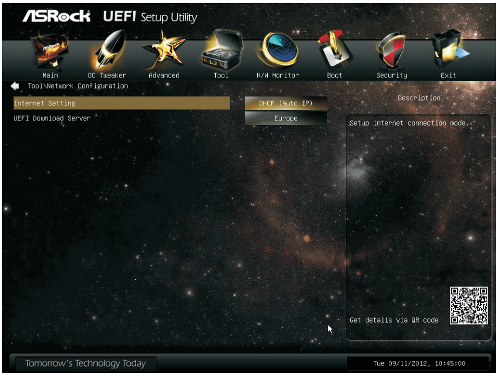
Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just save the new UEFI file to your USB flash drive, floppy disk or hard drive and launch this tool, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after the UEFI update process is completed.

Internet Flash

Internet Flash searches for available UEFI firmware updates from our servers. In other words, the system can auto-detect the latest UEFI from our servers and flash them without entering Windows OS. Please note that you must be running on a DHCP configured computer in order to enable this function.

Network Configuration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Internet Setting DHCP (Auto IP)
UEFI Download Server Europe

Setup internet connection mode.

Internet Setting

Use this item to set up the internet connection mode. Configuration options: [DHCP (Auto IP)] and [PPPOE].

UEFI Download Server

Use this item to select UEFI firmware download server for Internet Flash. Configuration options: [Asia], [Europe], [USA] and [China].

Dehumidifier Function

Users may prevent motherboard damages due to dampness by enabling “Dehumidifier Function”. When enabling Dehumidifier Function, the computer will power on automatically to dehumidify the system after entering S4/S5 state.

Dehumidifier Period

This allows users to configure the period of time until the computer powers on and enables “Dehumidifier” after entering S4/S5 state.

Dehumidifier Duration

This allows users to configure the duration of the dehumidifying process before it returns to S4/S5 state.

Dehumidifier CPU Fan Setting

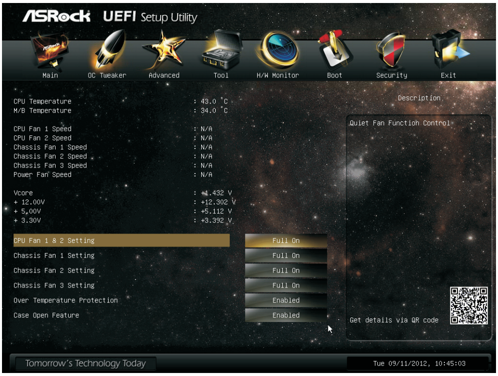
Use this setting to configure CPU fan speed while “Dehumidifier” is enabled.

Would you like to save current setting user defaults?

In this option, you are allowed to load and save three user defaults according to your own requirements.

3.6 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.



```
CPU Temperature                : 43.0 °C
M/B Temperature                : 34.0 °C

CPU Fan 1 Speed                : N/A
CPU Fan 2 Speed                : N/A
Chassis Fan 1 Speed            : N/A
Chassis Fan 2 Speed            : N/A
Chassis Fan 3 Speed            : N/A
Power Fan Speed                : N/A

Vcore                          : +1.432 V
+ 12.00V                       : +12.302 V
+ 5.00V                        : +5.112 V
+ 3.30V                        : +3.392 V

CPU Fan 1 & 2 Setting                 Full On
Chassis Fan 1 Setting                 Full On
Chassis Fan 2 Setting                 Full On
Chassis Fan 3 Setting                 Full On
Over Temperature Protection           Enabled
Case Open Feature                     Enabled
```

Quiet Fan Function Control

Get details via QR code

Tue 09/11/2012, 10:45:03

CPU Fan 1 & 2 Setting

This allows you to set the CPU fan 1 & 2 speed. Configuration options: [Full On] and [Automatic Mode]. The default is value [Full On].

Chassis Fan 1 Setting

This allows you to set the chassis fan 1 speed. Configuration options: [Full On], [Manual Mode] and [Automatic Mode]. The default is value [Full On].

Chassis Fan 2 Setting

This allows you to set the chassis fan 2 speed. Configuration options: [Full On] and [Manual Mode]. The default is value [Full On].

Chassis Fan 3 Setting

This allows you to set the chassis fan 3 speed. Configuration options: [Full On] and [Manual Mode]. The default is value [Full On].

Over Temperature Protection

Use this item to enable or disable Over Temperature Protection. The default value is [Enabled].

Case Open Feature

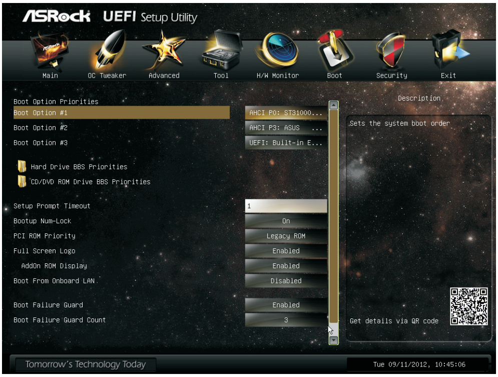
This allows you to enable or disable case open detection feature. The default is value [Disabled].

Clear Status

This option appears only when the case open has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

3.7 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.



```
Boot Option Priorities
Boot Option #1                      AHCI P0: ST31000...
Boot Option #2                      AHCI P3: ASUS   ...
Boot Option #3                      UEFI: Built-in E...

Hard Drive BBS Priorities
CD/DVD ROM Drive BBS Priorities

Setup Prompt Timeout                1
Bootup Num-Lock                     On
PCI ROM Priority                    Legacy ROM
Full Screen Logo                    Enabled
  AddOn ROM Display                 Enabled
Boot From Onboard LAN               Disabled

Boot Failure Guard                  Enabled
Boot Failure Guard Count            3
```

Sets the system boot order

Get details via QR code

Tue 09/11/2012, 10:45:06

Fast Boot

Fast Boot minimizes your computer's boot time. There are three configuration options: [Disabled], [Fast] and [Ultra Fast]. The default value is [Disabled]. Please refer to below descriptions for the details of these three options:

[Disabled] - Disable Fast Boot.

[Fast] - The only restriction is you may not boot by using an USB flash drive.

[Ultra Fast] - There are a few restrictions.

1. Only supports Windows® 8 UEFI operating system.
2. You will not be able to enter BIOS Setup (Clear CMOS or run utility in Widows® to enter BIOS Setup).
3. If you are using an external graphics card, the VBIOS must support UEFI GOP in order to boot.

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Bootup Num-Lock

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

PCI ROM Priority

Use this item to adjust PCI ROM Priority. The default value is [Legacy ROM].

Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

AddOn ROM Display

Use this option to adjust AddOn ROM Display. If you enable the option “Full Screen Logo” but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

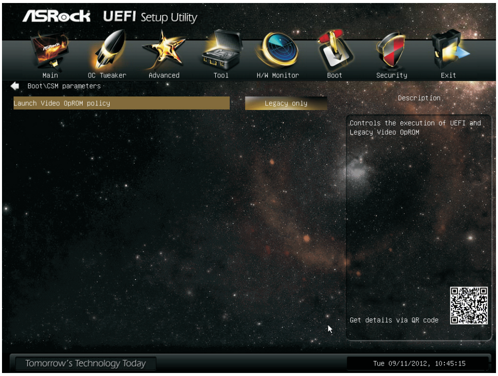
Boot Failure Guard

Enable or disable the feature of Boot Failure Guard.

Boot Failure Guard Count

Enable or disable the feature of Boot Failure Guard Count.

CSM parameters


ASRock UEFI Setup Utility
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
Description
Tomorrow's Technology Today
Tue 09/11/2012, 10:45:15

Boot\CSM parameters

Launch Video OpROM policy	Legacy only

Controls the execution of UEFI and Legacy Video OpROM

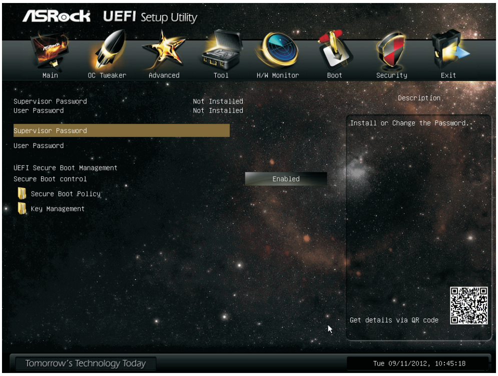
Get details via QR code

Launch Video OpROM policy

Use this to control the execution of UEFI and Legacy Video OpROM. The default value is [Legacy only].

3.8 Security Screen

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.


ASRock UEFI Setup Utility
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
Tomorrow's Technology Today

Supervisor Password Not Installed
User Password Not Installed

Supervisor Password
User Password

UEFI Secure Boot Management
Secure Boot control Enabled
Secure Boot Policy
Key Management

Description
Install or Change the Password.

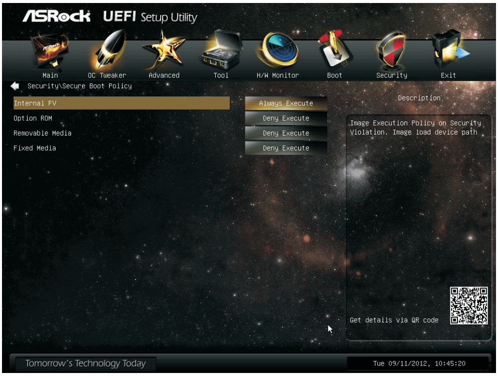
Get details via QR code

Tue 09/11/2012, 10:45:18

Secure Boot Control

Use this to enable or disable Secure Boot Control. The default value is [Enabled].

Secure Boot Policy


ASRock UEFI Setup Utility
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
Tomorrow's Technology Today

Security\Secure Boot Policy

Internal FV Always Execute
Option ROM Deny Execute
Removable Media Deny Execute
Fixed Media Deny Execute

Description
Image Execution Policy on Security Violation. Image load device path

Get details via QR code

Tue 09/11/2012, 10:45:20

Internal FV

Image Execution Policy on Security Violation. Image load device path. The default value is [Always Execute].

Option ROM

The default value is [Deny Execute].

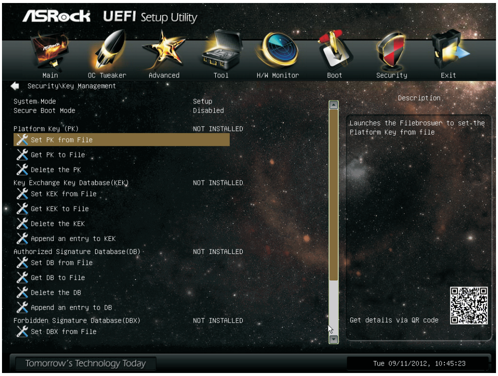
Removable Media

The default value is [Deny Execute].

Fixed Media

The default value is [Deny Execute].

Key Management


ASRock UEFI Setup Utility
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
Tomorrow's Technology Today

Security\Key Management

System Mode Setup
Secure Boot Mode Disabled

Platform Key (PK) NOT INSTALLED
Set PK from File
Get PK to File
Delete the PK
Key Exchange Key Database(KEK) NOT INSTALLED
Set KEK from File
Get KEK to File
Delete the KEK
Append an entry to KEK
Authorized Signature Database(DB) NOT INSTALLED
Set DB from File
Get DB to File
Delete the DB
Append an entry to DB
Forbidden Signature Database(DBX) NOT INSTALLED
Set DBX from File

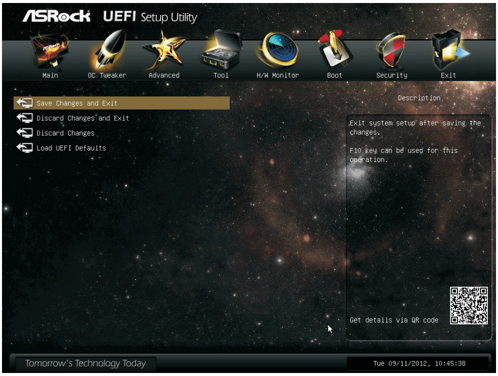
Description

Launches the Filebroswer to set the Platform Key from file

Get details via QR code

Tue 09/11/2012, 10:45:23

3.9 Exit Screen


ASRock UEFI Setup Utility
Main
OC Tweaker
Advanced
Tool
H/W Monitor
Boot
Security
Exit
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load UEFI Defaults
Description
Tomorrow's Technology Today
Tue 09/11/2012, 10:45:38

Exit system setup after saving the changes.

F10 key can be used for this operation.

Get details via QR code

Save Changes and Exit

When you select this option, it will pop-out the following message, "Save configuration changes and exit setup?" Select [OK] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, it will pop-out the following message, "Discard changes and exit setup?" Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, it will pop-out the following message, "Discard changes?" Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

4. Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASSETUP.EXE" from the BIN folder in the Support CD to display the menus.

4.2.2 Drivers Menu

The Drivers Menu shows the available devices drivers if the system detects the installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the applications software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock or want to know more about ASRock, welcome to visit ASRock's website at http://www.asrock.com; or you may contact your dealer for further information.

Installing OS on a HDD Larger Than 2TB

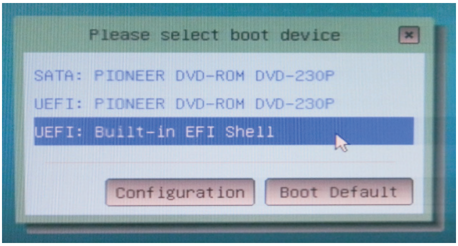
This motherboard is adopting UEFI BIOS that allows Windows® OS to be installed on a large size HDD (>2TB). Please follow below procedure to install the operating system.

1. Please make sure to use **Windows® Vista™ 64-bit (with SP1 or above)**, **Windows® 7 64-bit** or **Windows® 8 64-bit**.
2. Press <F2> or <Delete> at system POST. Set **AHCI Mode** in UEFI Setup Utility > Advanced > Storage Configuration > SATA Mode.
3. Choose the item **“UEFI:xxx“** to boot in UEFI Setup Utility > Boot > Boot Option #1. (“xxx” is the device which contains your Windows® installation files. Normally it is an optical drive.) You can also press <F11> to launch boot menu at system POST and choose the item **“UEFI:xxx“** to boot.
4. Start Windows® installation.

Installing OS on a HDD Larger Than 2TB in RAID Mode

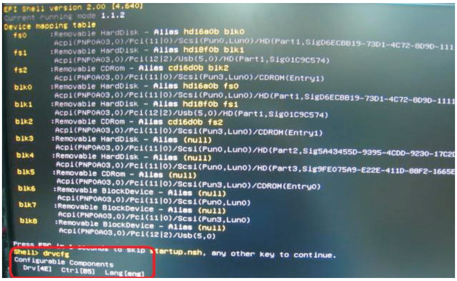
This motherboard is adopting UEFI BIOS that allows Windows® OS to be installed on a large size HDD (>2TB). Please follow below procedure to install the operating system.

1. Please make sure to use **Windows® Vista™ 64-bit (with SP1 or above)**, **Windows® 7 64-bit** or **Windows® 8 64-bit**.
2. Press <F2> or <Delete> at system POST. Set **RAID Mode** in UEFI Setup Utility > Advanced > Storage Configuration > SATA Mode.
3. Choose **onboard RAID 3TB+ unlocker** > **UEFI Mode For GPT partition**. Press <F10> to save the change and exit.
4. Press <F11> to enter Boot Manual. Choose **UEFI : Built - in EFI Shell**.



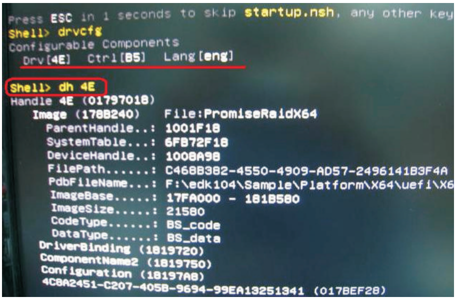
Please select boot device
SATA: PIONEER DVD-ROM DVD-230P
UEFI: PIONEER DVD-ROM DVD-230P
UEFI: Built-in EFI Shell
Configuration
Boot Default

5. Key in **drvcfg**, for example you will see below:
   Drv[4E]   Ctrl[B5]   Lang[eng]



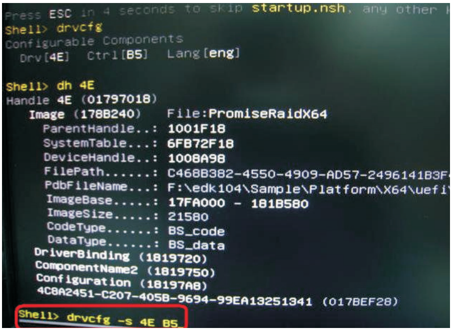
```
EFI Shell version 2.00 [4.640]
Current running mode 1.1.2
Device mapping table
  fs0     :Removable HardDisk - Alias hd16a0b blk0
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun0,Lun0)/HD(Part1,SigD6ECBB19-73D1-4C72-8D9D-111
  fs1     :Removable HardDisk - Alias hd18f0b blk1
           Acpi(PNP0A03,0)/Pci(12|2)/Usb(5,0)/HD(Part1,Sig01C9C574)
  fs2     :Removable CDRom - Alias cd16d0b blk2
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun3,Lun0)/CDROM(Entry1)
  blk0    :Removable HardDisk - Alias hd16a0b fs0
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun0,Lun0)/HD(Part1,SigD6ECBB19-73D1-4C72-8D9D-1111
  blk1    :Removable HardDisk - Alias hd18f0b fs1
           Acpi(PNP0A03,0)/Pci(12|2)/Usb(5,0)/HD(Part1,Sig01C9C574)
  blk2    :Removable CDRom - Alias cd16d0b fs2
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun3,Lun0)/CDROM(Entry1)
  blk3    :Removable HardDisk - Alias (null)
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun0,Lun0)/HD(Part2,Sig5A43455D-9395-4CDD-9230-17C2
  blk4    :Removable HardDisk - Alias (null)
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun0,Lun0)/HD(Part3,Sig9FE075A9-E22E-411D-88F2-1665E
  blk5    :Removable CDRom - Alias (null)
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun3,Lun0)/CDROM(Entry0)
  blk6    :Removable BlockDevice - Alias (null)
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun0,Lun0)
  blk7    :Removable BlockDevice - Alias (null)
           Acpi(PNP0A03,0)/Pci(11|0)/Scsi(Pun3,Lun0)
  blk8    :Removable BlockDevice - Alias (null)
           Acpi(PNP0A03,0)/Pci(12|2)/Usb(5,0)

Press ESC in 1 seconds to skip startup.nsh, any other key to continue.
Shell> drvcfg
Configurable Components
  Drv[4E]  Ctrl[B5]  Lang[eng]
```

6. Key in **dh [Drv number]**, for example: key in **dh 4E**.



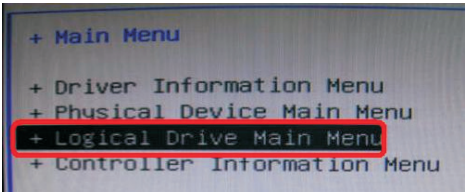
```
Press ESC in 1 seconds to skip startup.nsh, any other key
Shell> drvcfg
Configurable Components
  Drv[4E]  Ctrl[B5]  Lang[eng]

Shell> dh 4E
Handle 4E (01797018)
   Image (178B240)   File:PromiseRaidX64
     ParentHandle..: 1001F18
     SystemTable...: 6FB72F18
     DeviceHandle..: 1008A98
     FilePath......: C468B382-4550-4909-AD57-2496141B3F4A
     PdbFileName...: F:\edk104\Sample\Platform\X64\uefi\X6
     ImageBase.....: 17FA000 - 1818580
     ImageSize.....: 21580
     CodeType......: BS_code
     DataType......: BS_data
   DriverBinding (1819720)
   ComponentName2 (1819750)
   Configuration (18197A8)
   4C8A2451-C207-405B-9694-99EA13251341 (017BEF28)
```

7. And then key in **drvcfg –s [Drv number] [Ctrl number]** to enter Raid Utility.
For example: key in **drvcfg –s 4E B5**.

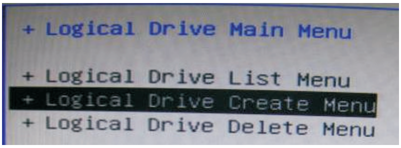


```
Press ESC in 4 seconds to skip startup.nsh, any other 
Shell> drvcfg
Configurable Components
  Drv[4E]  Ctrl[B5]  Lang[eng]

Shell> dh 4E
Handle 4E (01797018)
   Image (178B240)    File:PromiseRaidX64
     ParentHandle..: 1001F18
     SystemTable...: 6FB72F18
     DeviceHandle..: 1008A98
     FilePath......: C468B382-4550-4909-AD57-2496141B3F
     PdbFileName...: F:\edk104\Sample\Platform\X64\uefi
     ImageBase.....: 17FA000 - 181B580
     ImageSize.....: 21580
     CodeType......: BS_code
     DataType......: BS_data
   DriverBinding (1819720)
   ComponentName2 (1819750)
   Configuration (18197A8)
   4C8A2451-C207-405B-9694-99EA13251341 (017BEF28)
Shell> drvcfg -s 4E B5_
```

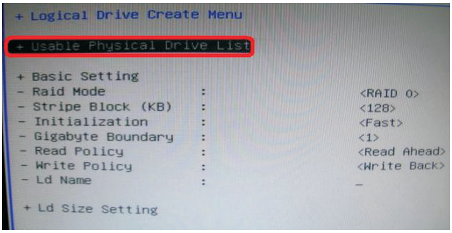
8. Choose **Logical Drive Main Menu** to set up Raid Drive.


+ Main Menu
+ Driver Information Menu
+ Physical Device Main Menu
+ Logical Drive Main Menu
+ Controller Information Menu

9. Choose **Logical Drive Create Menu** to create a Raid Drive.

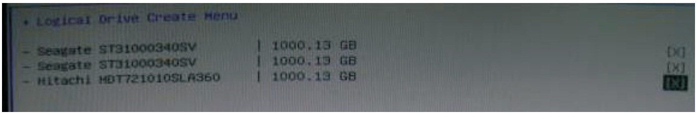

+ Logical Drive Main Menu
+ Logical Drive List Menu
+ Logical Drive Create Menu
+ Logical Drive Delete Menu

10. Choose **Usable Physical Drive List** to select Raid HDD.



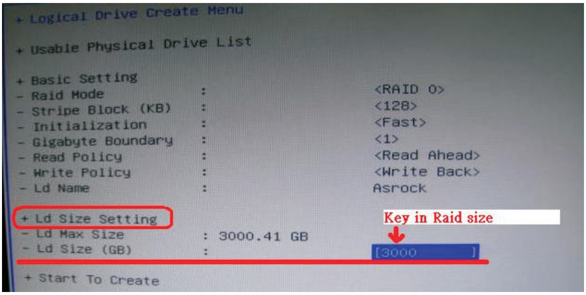
```
+ Logical Drive Create Menu

+ Usable Physical Drive List

+ Basic Setting
- Raid Mode             :      <RAID 0>
- Stripe Block (KB)     :      <128>
- Initialization        :      <Fast>
- Gigabyte Boundary     :      <1>
- Read Policy           :      <Read Ahead>
- Write Policy          :      <Write Back>
- Ld Name               :      _

+ Ld Size Setting
```

11. Press **Space** on keyboard to toggle checkbox.



```
+ Logical Drive Create Menu

- Seagate ST31000340SV        | 1000.13 GB                [X]
- Seagate ST31000340SV        | 1000.13 GB                [X]
- Hitachi HDT721010SLA360     | 1000.13 GB                [X]
```

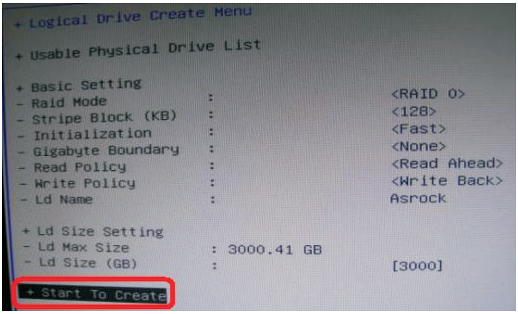
12. Choose **Ld Size setting**, and key in the Raid size.



```
+ Logical Drive Create Menu

+ Usable Physical Drive List

+ Basic Setting
- Raid Mode              :                 <RAID 0>
- Stripe Block (KB)      :                 <128>
- Initialization         :                 <Fast>
- Gigabyte Boundary      :                 <1>
- Read Policy            :                 <Read Ahead>
- Write Policy           :                 <Write Back>
- Ld Name                :                 Asrock

+ Ld Size Setting
- Ld Max Size            : 3000.41 GB
- Ld Size (GB)           :                 [3000          ]

+ Start To Create
```

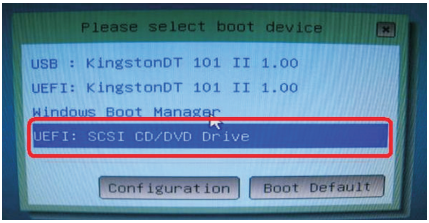
Key in Raid size

13. After set up Raid size, please click **Start to Create**.



```
+ Logical Drive Create Menu

+ Usable Physical Drive List

+ Basic Setting
- Raid Mode              :                 <RAID 0>
- Stripe Block (KB)      :                 <128>
- Initialization         :                 <Fast>
- Gigabyte Boundary      :                 <None>
- Read Policy            :                 <Read Ahead>
- Write Policy           :                 <Write Back>
- Ld Name                :                 Asrock

+ Ld Size Setting
- Ld Max Size            : 3000.41 GB
- Ld Size (GB)           :                 [3000]

+ Start To Create
```

14. Press <F10> to exit Utility.
15. During reboot, please press <F11> to enter Boot Manual. Choose **UEFI: SCSI CD/DVD Drive**.



Please select boot device
USB : KingstonDT 101 II 1.00
UEFI: KingstonDT 101 II 1.00
Windows Boot Manager
UEFI: SCSI CD/DVD Drive
Configuration
Boot Default

* This option only shows on Windows® 8 64-bit, 7 64-bit and Vista™ 64-bit OS.

16. Follow Windows® Installation Guide to install OS.

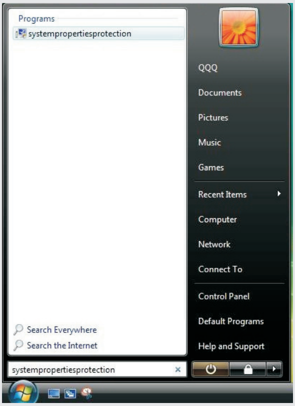
If you install Windows® 8 64-bit / 7 64-bit / Vista™ 64-bit in a large hard disk (ex. Disk volume > 2TB), it may take more time to boot into Windows® or install driver/utilities. If you encounter this problem, you will need to following instructions to fix this problem.

Windows® Vista™ 64-bit:

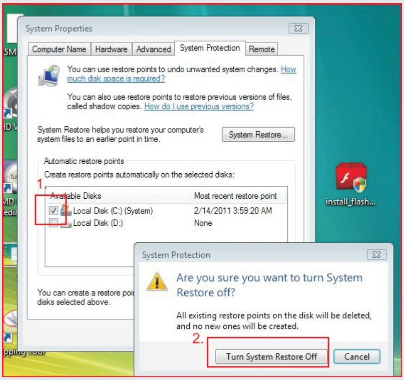
Microsoft® does not provide hotfix for this problem. Below steps are Microsoft® suggested solution:

A. Disable System Restore.

a. Type "systempropertiesprotection" in the Start Menu. Then press "Enter".


Programs
systempropertiesprotection
QQQ
Documents
Pictures
Music
Games
Recent Items
Computer
Network
Connect To
Control Panel
Default Programs
Help and Support
Search Everywhere
Search the Internet
systempropertiesprotection

b. De-select Local Disks for System Restore. Then Click "Turn System Restore Off" to confirm. Then Press "Ok".


System Properties
Computer Name
Hardware
Advanced
System Protection
Remote
System Restore...
Automatic restore points
Available Disks
Most recent restore point
1.
install_flash...
System Protection
2.
Turn System Restore Off
Cancel

You can use restore points to undo unwanted system changes. How much disk space is required?

You can also use restore points to restore previous versions of files, called shadow copies. How do I use previous versions?

System Restore helps you restore your computer's system files to an earlier point in time.

Create restore points automatically on the selected disks:

Available Disks	Most recent restore point
☑ Local Disk (C:) (System)	2/14/2011 3:59:20 AM
☐ Local Disk (D:)	None

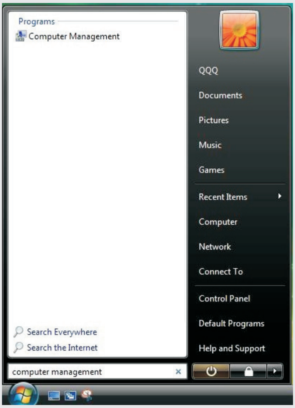
You can create a restore poi… disks selected above.

Are you sure you want to turn System Restore off?

All existing restore points on the disk will be deleted, and no new ones will be created.

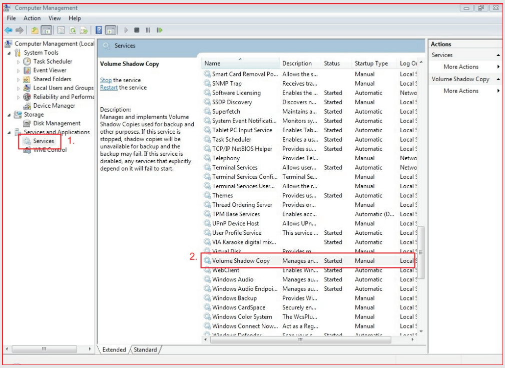
B. Disable “Volume Shadow Copy” service.

a. Type “computer management” in the Start Menu, then press “Enter”.


Programs
Computer Management
QQQ
Documents
Pictures
Music
Games
Recent Items
Computer
Network
Connect To
Control Panel
Default Programs
Help and Support
Search Everywhere
Search the Internet

computer management

b. Go to “Services and Applications>Services”; Then double click “Volume Shadow Copy”.


Computer Management
File
Action
View
Help
Computer Management (Local
System Tools
Task Scheduler
Event Viewer
Shared Folders
Local Users and Groups
Reliability and Performa
Device Manager
Storage
Disk Management
Services and Applications
Services
1.
WMI Control
Services
Actions
Services
More Actions
Volume Shadow Copy
More Actions
2.
Extended
Standard

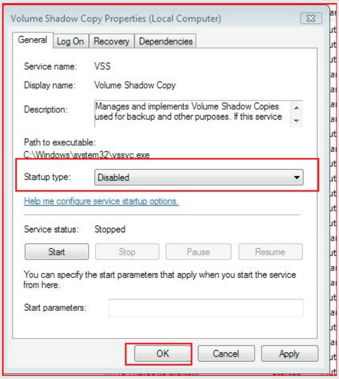
Volume Shadow Copy

Stop the service
Restart the service

Description:
Manages and implements Volume Shadow Copies used for backup and other purposes. If this service is stopped, shadow copies will be unavailable for backup and the backup may fail. If this service is disabled, any services that explicitly depend on it will fail to start.

Name	Description	Status	Startup Type	Log O
Smart Card Removal Po...	Allows the s...		Manual	Local
SNMP Trap	Receives tra...		Manual	Local
Software Licensing	Enables the ...	Started	Automatic	Netwo
SSDP Discovery	Discovers n...	Started	Manual	Local
Superfetch	Maintains a...	Started	Automatic	Local
System Event Notificati...	Monitors sy...	Started	Automatic	Local
Tablet PC Input Service	Enables Tab...	Started	Automatic	Local
Task Scheduler	Enables a us...	Started	Automatic	Local
TCP/IP NetBIOS Helper	Provides su...	Started	Automatic	Local
Telephony	Provides Tel...		Manual	Netwo
Terminal Services	Allows user...	Started	Automatic	Netwo
Terminal Services Confi...	Terminal Se...		Manual	Local
Terminal Services User...	Allows the r...		Manual	Local
Themes	Provides us...	Started	Automatic	Local
Thread Ordering Server	Provides or...		Manual	Local
TPM Base Services	Enables acc...		Automatic (D...	Local
UPnP Device Host	Allows UPn...		Manual	Local
User Profile Service	This service ...	Started	Automatic	Local
VIA Karaoke digital mix...		Started	Automatic	Local
Virtual Disk	Provides m...		Manual	Local
Volume Shadow Copy	Manages an...	Started	Manual	Local
WebClient	Enables Win...	Started	Automatic	Local
Windows Audio	Manages au...	Started	Automatic	Local
Windows Audio Endpoi...	Manages au...	Started	Automatic	Local
Windows Backup	Provides Wi...		Manual	Local
Windows CardSpace	Securely en...		Manual	Local
Windows Color System	The WcsPlu...		Manual	Local
Windows Connect Now...	Act as a Reg...		Manual	Local
Windows Defender	Scan your c...	Started	Automatic	Local

c. Set “Startup type” to “Disable” then Click “OK”.


Volume Shadow Copy Properties (Local Computer)
General
Log On
Recovery
Dependencies
Help me configure service startup options.
Start
Stop
Pause
Resume
OK
Cancel
Apply

Service name: VSS

Display name: Volume Shadow Copy

Description: Manages and implements Volume Shadow Copies used for backup and other purposes. If this service

Path to executable:
C:\Windows\system32\vssvc.exe

Startup type: Disabled

Service status: Stopped

You can specify the start parameters that apply when you start the service from here.

Start parameters:

C. Reboot your system.

D. After reboot, please start to install motherboard drivers and utilities.

Windows® 8 64-bit / 7 64-bit:

A. Please request the hotfix KB2505454 thru this link:
http://support.microsoft.com/kb/2505454/

B. After installing Windows® 8 64-bit / 7 64-bit, install the hotfix kb2505454.
(This may take long time; >30 mins.)

C. Reboot your system. (It may take about 5 mins to boot.)

D. The Windows® will install this hotfix then reboot by itself.

E. Please start to install motherboard drivers and utilities.

17. Finish.